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ABSTRACT

This report, the fifth in a series assessing educational quality in Utah public schools, focuses on students' achievements and provides performance measures based on statewide results of various testing programs and special studies. The report presents three types of data relevant to major state board of education programs (such as Utah System Wide Planning Commission recommendations): (1) student achievement and aptitude results from the American College Testing Program (ACT), Scholastic Aptitude Test, Preliminary Scholastic Aptitude Test, Utah Statewide Educational Assessment Program, Adult Performance Level Test, Advanced Placement Program, National Assessment of Educational Progress, and the International Education Study; (2) student biographical information, educational and vocational plans, out-of-class accomplishments, and student evaluations of their high school education from the ACT student profile; and (3) information from the U.S. census and a synopsis of Utah school accreditation activities. A final chapter summarizes findings and examines five areas of performance or implications and related sources of information: academic achievement, student characteristics, educational processes, key program thrusts and goals, and education in the 1980s and beyond. Statewide and national testing program results and special studies data are provided in 39 graphs and tables. An appendix provides Utah ACT scores and standard deviations between 1966 and 1982. (PB)

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UTAH EDUCATIONAL QUALITY INDICATORS

The Fifth in the Report Series: "How Good are Utah Public Schools?"

UTAH STATE OFFICE OF EDUCATION

G. Leland Burningham, Superintendent of Public Instruction
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by

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January 1983

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FOREWORD

Since 1967 the Utah State Office of Education has sought to compile and report pertinent information in respect to student performance statewide. This effort has taken the form of five reports in the "How Good Are Utah Public Schools?" series and three major Statewide Educational Assessments. It is the conviction of the Board and the State Office of Education that measurement of student achievement and other qualities is crucial as a basis for making progressive changes in the educational system.

This report, which is the fifth in the "How Good Are Utah Public Schools?" series, summarizes the results from a variety of ongoing and special studies. These studies, taken together, provide a useful index of the performance of the Utah elementary and secondary public education system. A particular effort was made to document trends in student performance.

This report series, in conjunction with Utah's ongoing Statewide Educational Assessment Program, represents a significant Utah attempt to document both the achievement of Utah students in basic skills areas and other important student learnings and characteristics. These measurement areas are included in Utah's statement of student outcomes, Goals and General Objectives of Education in Utah.

Utah Educational Quality Indicators was prepared under the general direction of Dr. Richard Kendell, Associate Superintendent, Office of Planning and External Relations. The major author of the report was Dr. David E. Nelson.

G. Leland Burningham

G. Leland Burningham
State Superintendent of
Public Instruction

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Within the State Office of Education many staff members were instrumental in helping produce this report. Warren Gaddis accomplished the initial research for the Adult Performance Level section of the report. Lee Gray of the Office of Curriculum prepared the cover and exhibits for the report with her now expected level of superior creative talent. Sharon Murdock and the publications staff provided a fine quality printing job for the report.

In the Office of Planning and External Relations, several staff members deserve a special thanks. Dr. Richard Kendell provided helpful suggestions on the content of the report. Barbara Banks and Nola Miller assisted in many aspects of the report ranging from data analysis to critiquing drafts. Finally, Laraine Broschinsky worked her typical miracles in producing a truly excellent typed manuscript.

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I. INTRODUCTION

INTRODUCTION

For 15 years the State Office of Education has been monitoring systematically the academic performance and other characteristics of Utah students. This program began with the first report in this series, "How Good are Utah Public Schools?" published in 1967. The present report is the fifth in that series and, as with the previous reports, the basic purpose of this volume is to examine several kinds of indicators which describe the quality of education in Utah's public schools. The focus of this report is on the outcomes of education -- the knowledges, attitudes, and skills which students acquire.

Specifically, this report provides a set of general performance measures which are based on the results of various testing programs and special studies which help gauge the effectiveness of the public schools. Results from many of these testing programs, such as the Utah Statewide Educational Assessment and the American College Testing Program, are longitudinal in nature. Thus, the trends in the way students score on many measures may be examined. Hopefully, the performance results reported here will provide something of an analog to leading economic indicators often used to measure and predict the economic activity of the nation. Our interest here, of course, is educational productivity as defined by student performance and characteristics.

The performance information contained in this report is relevant to numerous programs and efforts of the State Board of Education and its staff. In particular, the studies reported here are pertinent to several major efforts which are briefly described in the following sections.

The Five-Year Goals and Objectives Established by the State Board of Education for the Utah Educational System. The State Board of Education is

invested with the constitutional responsibility to provide general control and supervision of Utah's public school system. As one expression of its awareness of the importance of this responsibility, the Board, late in 1978, formulated a set of system-wide, long-range goals. The first goal established by the Board dealt with system-wide master planning and reads as follows:

> System-wide planning and policy formulation for all public education in Utah is essential and will be done in such a way as to involve the State Board of Education, schools, districts, educational institutions (as components of the public education system), the general public, and the legislature, each with a respective role and responsibility. The State Board of Education will provide effective leadership in implementing such planning and policy formulation and will work with other components of the public school system in strengthening their capabilities to engage in long-range planning for the good of public education in this state.

The present report is one of the information sources which is crucial to the implementation of activities which are pertinent in pursuing the goal of system-wide educational planning for Utah.

The Work of the Utah System-Wide Education Planning Commission (U-SEP). One major activity which stemmed from the formulation of the system-wide planning goal described above was an effort to produce a master plan for improving public education across the state in the 1980's. The production of this plan involved the participation of over 100 educators and lay persons from across the state on a special planning commission and resulted in a master plan which addressed eight critical issues. Those issues were the following:

- School Finance
- School Facilities
- Governance of Public Education
- Public Involvement and Participation in Education
- Curriculum Organization
- Quality Staff
- Helping Students Develop Their Potentialities
- Purpose and Nature of Schooling

Numerous recommendations were made in each of the areas described above. The present report addresses several key recommendations of the U-SEP Commission, particularly those dealing with "helping students to develop their potentialities," and "the purpose and nature of schooling."

Most recently, many aspects of the work of the U-SEP Commission have been incorporated in a set of State Board of Education initiatives or areas of program emphasis. These initiatives deal with such diverse aspects of the educational system as productivity, the role of the principal, teacher evaluation, as well as areas of critical shortage and teacher supply. Also included are initiatives focused on valuing teachers, micro-computer information technology, community-based education planning, the impact of the present system on special groups, the coordination of academic subjects with vocational subjects, and free enterprise. Many of these specific programs, designed to implement the U-SEP Commission reports and other on-going policies and programs of the State Board of Education, have the potential for long-term impact on the public system. Again, the types of information reported in this volume address some key aspects of the impact which initiatives, such as that in educational productivity, may have on the system.

The State Board of Education's Statement on Student Outcomes: "Goals and General Objectives of Education in Utah." In the fall of 1972, the State Course of Study Committee produced a set of general student outcomes or goals which were approved by the State Board of Education in 1973. These goals have remained the central elaboration of student outcomes for Utah's educational system and attempt to define the kinds of maturities a student might achieve while progressing through the system. Those student outcome goal descriptions follow:

Intellectual Maturity - A person's intellectual maturity is exemplified by a continuing desire for understanding; a continuing interest in current problems, a continuing accumulation of knowledge; and an increasing ability to use his or her rational powers.

Ethical-Moral-Spiritual Maturity - A person's ethical-moral-spiritual maturity is exemplified by continuing use of rational powers and internalizing, valuing, and empathizing processes in satisfying oneself regarding life's purposes; in locating oneself in time and space; in preserving life; in comprehending death; and in perceiving relationships to humanity and to the basic force of the universe.

Emotional Maturity - A person's emotional maturity is exemplified by an increasing constructive management of emotions, of coping with stress and frustration, self-acceptance, and of empathizing with others.

Social Maturity - A person's social maturity is exemplified by increasingly exercising freedom with its accruing responsibilities; demonstrating functional leadership and appropriate followership; interacting in the social environment for self-realization and/or awareness of the needs and values of others; acting within the basic values, institutions, and processes of American democracy; understanding world interdependency and how diverse cultures function.

Physical Maturity - A person's physical maturity is exemplified by a continuing appreciation and respect for the mind and body; increasing neuromuscular development; fulfilling experiences through physical activity; and continuing positive response toward the solution of problems arising from increased leisure and health needs.

Environmental Maturity - A person's environmental maturity is exemplified by a constant seeking to understand one's natural environment through rational thinking process; through demonstrating fundamental skills required in the use of materials, equipment, and information gathered concerning the environment; through exhibiting an awareness of relationships that exist between humanity and the environment; and through performing acts in the environment that are relevant to one's own well being and to that of others.

Aesthetic Maturity - An individual's aesthetic maturity is exemplified by an increasing sensitivity in perceiving the environment and acknowledging the human qualities of each individual; by a more satisfying use of one's senses in making aesthetic judgment; by more capably communicating aesthetic insights through the cultural arts; and through a greater harmony with oneself.

Productive Maturity - A person's productive maturity is exemplified by a continuing involvement in the creating, generating, and using of ideas, goods, and services beneficial to humanity and satisfying to the individual.

These statements of desirable student outcomes provide a general definition of educational and societal attainment and provide the basis for the formulation of more specific and instructionally-oriented objectives in the schools of the state. The responsibility for helping students achieve such broad goals does not lie with the schools alone. In many respects, such goals are properly the concern of all of our institutions, including the home, the schools, the churches, and the community at large. The present report provides information concerning the state's progress in helping students achieve various levels of these outcomes.

Utah's 1977 Graduation Requirements. In 1977, the State Board of Education approved a new set of graduation requirements for the schools of the state. These were revised to some extent in 1980. One element in the graduation requirements deals with the establishment of several areas of student functional competency. The requirement is as follows:

> Except for the students officially classified as handicapped whose handicaps have a direct bearing, students shall have demonstrated functional competencies in the following basic skills. Standards of competency shall be prescribed by the local board of education with guidance and assistance from the State Board of Education and shall be such as to enable the student to function effectively in society in the following areas:
>
> (a) Reading, writing, speaking and listening.
> (b) Computation in (Arithmetic).
> (c) Processes and structure of democratic governance.
> (d) As a consumer of goods and services.
> (e) Problem solving.

The responsibility for certifying student progress and achievement of the listed competency areas lies with the local school district. Studies like those presented in this report, however, can provide a useful statewide picture in many of these same general performance areas.

The 1977 Utah Graduation Requirements also include a provision calling for the completion of an individual education plan for each secondary student. This requirement holds tremendous potential for assisting and encouraging students to engage in a program of studies specifically structured for individual needs. Effective implementation of this requirement could have a profound impact on various measures of student characteristics and academic performance which also need to be monitored.

Implications for Other Programs. In addition to the major system-wide efforts described above, the information in Utah Educational Quality Indicators relates to many other policies and programs of the State Board and State Office of Education as well as local school districts. Longitudinal results in various areas of curriculum content allow state staff to monitor outcomes and characteristics in their areas of responsibility. These same state-wide results can provide helpful yardsticks to local districts and schools in examining educational performance at the local level. In total, this report is one piece of the complex whole which has come to be known as educational accountability. Certainly no single effort in measuring performance and reporting results to educators and the public is sufficient. Many other assessment and evaluation programs conducted at the national, state, and local levels contribute to the full accountability picture.

Concerns Over Educational Performance Nationally

During the past several years, much concern has been expressed nationally, by both the public and educators, over a decline in various kinds of test scores. The most visible and highly reported decline was in the area of college entrance examination scores, including the two major programs in this area, the Scholastic Aptitude Test (SAT) and the American

College Testing Program (ACT). In 1975, the College Entrance Examination Board (CEEB) commissioned an intensive study of the score decline. In their report (CEEB, 1977) on the score decline, the advisory panel, chaired by Willard Wirtz, former Secretary of Labor, concluded that the score decline was unquestionably more than a statistical artifact and was of real educational significance. This observation was strengthened by the panel's observation that declines had occurred on a variety of standardized academic tests in addition to the SAT.

The panel further indicated that the score decline seemed to fall in two categories which were essentially two separate score declines. The first was characterized as due to changes in the test taking population, while the second appeared to be the result of "pervasive influences, affecting virtually all groups of students alike..."

Specifically, the report presents the following overview of the two-stage score decline:

> Most--probably two-thirds to three-fourths--of the SAT score decline between 1963 and about 1970 was related to the "compositional" changes in the group of students taking this college entrance examination.
>
> That was a period of major expansion in the number and proportion of students completing high school, resulting only in part from the post-World War II population wave, which came along then. The rest of the growth reflected the deliberate national undertaking during that period to expand and extend educational opportunity--by reducing the high school dropout rate, by trying to eliminate previous discrimination based on ethnicity or sex or family financial circumstances, and by opening college doors wider.

The report goes on to elaborate on the second phase of the decline:

> From about 1970 on, the composition of the SAT-taking population has become comparatively more stabilized with respect to its economic, ethnic, and social background. Yet the score decline continued the acceleration. There were particularly sharp drops during the three-year period from 1972 to 1975.
>
> This second set of factors contributing to the SAT score decline can be summarized only in broad terms and with full recognition of two related qualifications. First, any attempt to

> isolate developments in the schools from those in the society at large turns out to reflect principally the inclination to institutionalize blame for whatever is going wrong; the formal part of the learning process cannot be separated from its societal context. Second, to the extent these causal factors are understood at present, they are inextricably interwoven with each other; any pointing to one development or another as if it were the, or even a, cause of decline is invariably misleading. [pps.45-46]

The panel then described in detail several factors believed to be responsible for the second phase of the score decline. These factors included:

- Changes in the curriculum including addition of elective courses and reduction in required courses.
- Lower expectations for student performance.
- The impact of television in detracting from homework and promoting a passive orientation in students.
- Changes in the role of family.
- Societal disruption between 1972 and 1975.
- Decreased student motivation.

More recently, after a period of essentially level score trends for college entrance test performance, 1982 marked the first increase in average scores as measured by the Scholastic Aptitude Test. This was, in fact, the first time since 1963 any increase in SAT scores had been noted. The present report, in the sections to follow dealing with ACT and SAT score results, illustrates the trends of student performance on a variety of measures over the past several years for both the nation and the state.

National Attitudes Toward Education

The recently published ten-year compilation of Gallup polls of attitudes toward education provides some interesting data concerning public perceptions (Elam, 1978). During the period of time from 1974 through 1978, the public ratings of schools across the nation declined at a steady

rate. In 1974 nearly half of Gallup's national sample afforded the schools either an "A" or a "B" rating. By 1978 this figure had dropped to slightly over one-third. This same overall level was noted in the 1982 poll as well (Gallup, 1982).

Gallup notes that for the ten-year period from 1969 through 1978 the public repeatedly identified three problems concerning the schools. The first had to do with student discipline, including lack of respect for teachers, ignoring school rules, and various kinds of improper classroom behavior. A second major problem for Gallup's national sample was the integration/segregation issue. In third place was the area of financial problems including concerns over the failure to pass school bonds and the difficulty in keeping schools open in areas of declining enrollment.

In the 1982 poll, discipline remained the first-ranked problem; concern over proper financial support for education appeared as the second school problem. The use of drugs was in the third position. These were followed by concerns over curriculum and standards, difficulty in getting good teachers and teachers' lack of interest.

Gallup draws the following conclusions concerning the problems faced by education in his ten-year study:

> A careful examination of survey findings for the ten-year period leads to this conclusion. Many of the problems of the schools can be solved only if parents become much more involved than they presently are in the educational process. Parents must, in fact, be regarded as part of the teaching team. A joint and coordinated effort by parents and teachers is essential to deal more successfully with problems of discipline, motivation, and the development of good work habits at home and in school. (pps. 2-3)

Utah Attitudes Toward Education

In 1980 the Utah State PTA and the State Office of Education accomplished a joint study of opinions about education across the state of Utah.

The results of this study were, in many instances, very similar to the findings of national surveys of public opinion like the Gallup poll. Of particular interest was the response of nearly 1,200 Utah citizens to the question, "In your opinion, what could the educational system do to better meet the needs of students and the public?" The following were the most frequently mentioned responses to that question and are presented in rank order:

- 1st More emphasis on the traditional academic areas such as English, mathematics, reading, science and history.
- 2nd Place less emphasis on extra-curricular activities and more on basic classroom study.
- 3rd Provide additional counseling opportunities for students.
- 4th Provide additional student discipline.
- 5th Provide opportunities for better and more frequent parent-teacher communication.
- 6th Retain and keep highly qualified teachers.

In rating specific aspects of the curriculum, very considerable importance was attached by Utah citizens participating in the study to the "traditional" academic areas with subjects such as English, mathematics, reading, science, and social studies all receiving very high levels of endorsement. The desire for strong emphasis on the academic areas, and less emphasis on electives and extra-curricular activities was apparent throughout the study.

Sources of Information for This Report

The present report contains information of several basic types. The first type of information deals with student academic achievement and aptitude. Included in this category are results from the American College

Testing Program, the Scholastic Aptitude Test, the Preliminary Scholastic Aptitude Test, the Utah Statewide Educational Assessment Program, the Adult Performance Level Test, the Advanced Placement Program, the National Assessment of Educational Progress, and the International Evaluation Study. A second category of information relates to student attitudes and evaluations of their school situation. These results are found in the section dealing with ACT information as well as the section on the Utah Statewide Educational Assessment Program. Also included is pertinent information from the United States census and a synopsis of Utah school accreditation activities. Each of these sources of information will be described in detail in their respective sections.

The Use of District Data to Provide a Statewide Index

The first two reports in the "How Good Are Utah Public Schools?" series attempted to accumulate and analyze the results of standardized achievement tests administered by local school districts in the state. District-administered achievement test information was not included in the 1974 report, the 1979 report, nor the present one. The reasons for not including such data are many, but all relate to the fact that while very different achievement test scores can be standardized and summed, and averages reported for the state as a whole, different tests do measure different things under similar scale names. The fact that there are many standardized achievement tests used by local districts in the state of Utah, coupled with lack of similarity in content among these tests, makes the combined analysis and interpretation of results from these differing measures, administered in different ways, and at different times, a technically questionable procedure.

The statewide results, which are generated every three years as a part of the Utah Statewide Assessment Program, provide legitimate statewide information on academic achievement which suffers from none of the technical inadequacies described above.

Limitations of the Study

The information contained in this report, as well as the four previous reports in the series, is a compilation of existing test results and other data from several different sources. Each of the testing or data gathering programs which provided results for this study had its own purposes for measurement. With the exception of the Utah Statewide Educational Assessment Program, the purposes of these various measurement efforts were unrelated to assessing the level of quality of public education in the state of Utah. Taken in total, however, these results are certainly important indicators of the overall performance of Utah's public school system.

It should be emphasized that this report, which is based on a variety of data from ongoing and special studies and programs, cannot take the place of a scientifically designed assessment program based on the state's educational goals. Utah has such a program in its Statewide Educational Assessment for which data is collected every three years. Statewide Assessment provides definitive, specific, cognitive and non-cognitive information about the functioning of Utah's school system based on scientifically drawn samples. Summaries of Statewide Assessment results are included here and are an important portion of this report which gathers information from numerous sources to help describe the status and trends in educational quality in the state.

II. AMERICAN COLLEGE TESTING PROGRAM (ACT) INFORMATION

AMERICAN COLLEGE TESTING PROGRAM (ACT) INFORMATION

The American College Testing Program provides a regularly scheduled program of testing and reporting to students, school systems, and colleges across the nation. Students taking the ACT achievement tests and student profile form are generally college-bound eleventh or twelfth graders.

ACT scores have typically been required for admission by institutions of higher learning in Utah. At the present time 60 to 65 percent of the students in a given graduating class in the state of Utah take the ACT. Among the uses of ACT test information are status reports on student educational development, uniform information on educational status, educational information for student placement, baseline data on students for institutional research, and the prediction of later student academic performance.

Each year approximately one million students in the United States take the ACT battery and these results are used by over twenty-thousand educational institutions. While the ACT test battery has changed somewhat from its inception in 1959, the core of the testing program has remained essentially the same. At present, the battery consists of the following sub-tests or sections as described by ACT (1981):

1. English Usage. This is a 75-item, 40-minute test that measures the student's understanding of the conventions of standard written English and the use of the basic elements of effective expository writing: punctuation, grammar, sentence structure, diction, style, logic, and organization. The test does not measure the rote recall of rules of grammar, but stresses the analysis of the kind of effective expression which will be encountered in many post-secondary curricula. The test consists of several prose passages with certain portions underlined and numbered. For each underlined portion, four alternative responses are given. The student must decide which alternative is most appropriate in the context of the passage.

2. Mathematics Usage. The Mathematics Usage Test is a 40-item, 50-minute test that measures the student's mathematical reasoning ability. It emphasizes the solution of practical quantitative problems which are encountered in many post-secondary curricula and includes a sampling of mathematical techniques covered in high school courses. The test emphasizes quantitative reasoning, rather than memorization of formulas, knowledge or techniques, or computational skills. Each item in the test poses a question with five alternative answers, the last of which may be "none of the above."

3. Social Studies Reading. This is a 52-item, 35-minute test that measures the comprehension, analytical and evaluative reasoning and problem-solving skills required in the social studies. There are two types of items: the first is based on reading passages, the second on general background or information obtained primarily in high school social studies courses. All items are multiple choice with four alternatives. The items based on the reading passages require not only reading comprehension skills, but the ability to draw inferences and conclusions, to examine the interrelationships and import ideas in a passage, to extend the thoughts of a passage to new situations, to make deductions from experimental or graphic data, and to recognize a writer's bias, style, and mode of reasoning. The discrete information items ask the students to apply what they have learned in high school social studies courses to familiar, new, and analogous problems.

4. Natural Science Reading. The Natural Sciences Reading Test is a 52-item, 35-minute test that measures the interpretation, analysis, evaluation, critical reasoning, and problem-solving skills required in the natural sciences. There are two types of items: the first based on reading passages, the second on information about science. All items are multiple choice with four alternatives. The passages concern a variety of scientific topics and problems. Descriptions of scientific experiments and discussions of current scientific theories are the most common formats. The items require the students to understand and distinguish among the purposes of experiments, to examine the logical relationships between experimental hypotheses and the generalizations which can be drawn from experiments, to predict the effects of ideas in a passage on new situations, to propose alternate ways to conduct experiments, and to judge the practical value of ideas and theories presented in a passage. The discrete information items ask the students to apply what they have learned in high school science courses to familiar, new and analogous problems. They require the understanding only of significant facts and minimal algebraic and arithmetic computations.

5. The Student Profile Section. A more recent edition to the ACT battery is the student profile. This section gathers biographical information about students, information about educational-vocational plans, out-of-class student accomplishments, factors influencing college choice, and special needs of students such as financial aid, employment, or educational needs.

A Note on the Interpretation of ACT Achievement Test Scores

The following information is taken from the ACT Assessment Counselor's Handbook:

> For each of the four tests in the ACT assessment, the number of correct responses is the raw score. The raw scores are converted to standard scores on a scale which ranges from 1 (low) to 36 (high). The minimum standard score for all four tests is 1. The maximum standard scores differ; English usage, 33; mathematics usage, 36; social studies reading, 34; and natural sciences reading, 35.
>
> The composite score is the average of the combined standard scores on the four tests. The minimum is 1, the maximum is 35. The mean composite score for college-bound high school students is approximately 18. [pps. 11-12]

Utah and National ACT Results for Achievement Tests: 1975 - 1982

Exhibits 1 through 5 present the average (mean) ACT standard scores for all Utah high school students taking the tests from 1975 through 1982, as well as the average scores for a 10% random sample of students across the nation taking the ACT.[1] This comparison places Utah at a disadvantage since a higher percentage of Utah students take the ACT than is the case in most other states. The ACT is taken by a self-selected group of students and Utah has traditionally had a very high percentage of a given graduating class take the test. In the most recent years approximately 65% of a given graduating class has taken the test. Thus, the national average on the ACT is, in a sense, a moderately difficult standard for the state of Utah on this test. Another implication here is that the Utah group of ACT test-takers likely includes many lower-scoring students who would not be taking this test in other states.

---

[1] Appendix A contains ACT means and standard deviations for 1970-82.

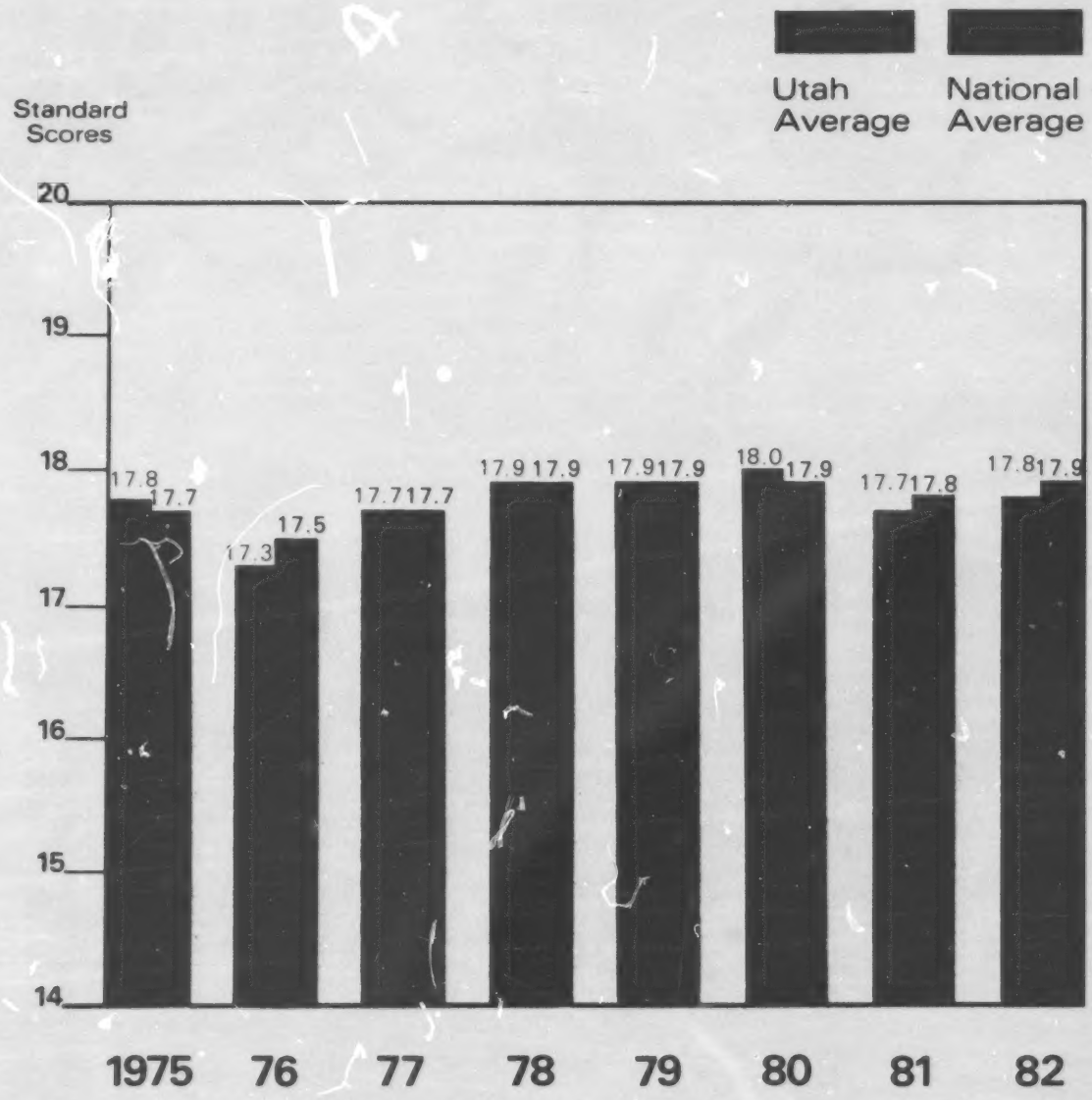
For the period of time represented in Tables 1 through 5 the number of Utah students taking the ACT has ranged from a low of 10,876 in 1976 to a high of 13,205 in 1982. Thus, the number of test-takers has risen while the number in a given graduating class in the state has remained much more stable. The 10% national sample which constitutes the national comparison group has ranged from 69,166 in 1976 to a high of 83,576 in 1981. The 1982 national random sample included 80,452 students.

English - Exhibit 1. Exhibit 1 presents the results for all Utah students and the national random sample taking the ACT English test. The profile of scores for the state during this period of time shows a low of 17.3 in 1976, followed by rather stable performance from 1977 through 1982. National scores for the same period of time exhibit a somewhat similar trend with stability after 1977 being the most noticeable characteristic of this set of scores. The most recent period, 1982, shows the Utah average one-tenth of a standard scale point lower than that of the national average.

Mathematics - Exhibit 2. Results for Utah students and the ACT national random sample in mathematics are depicted in Exhibit 2. Utah has consistently under-performed the national sample in each of the eight years shown in Exhibit 2. Both Utah and national scores are considerably lower during the period of time depicted than was the case earlier in the decade, with both groups showing about a two-point decline from the performance levels of the early 70's. While national performance has moved steadily downward since 1975, the Utah profile shows slightly more stability. Still, scores of the national sample continue to be higher than those observed for the Utah group.

EXHIBIT 1

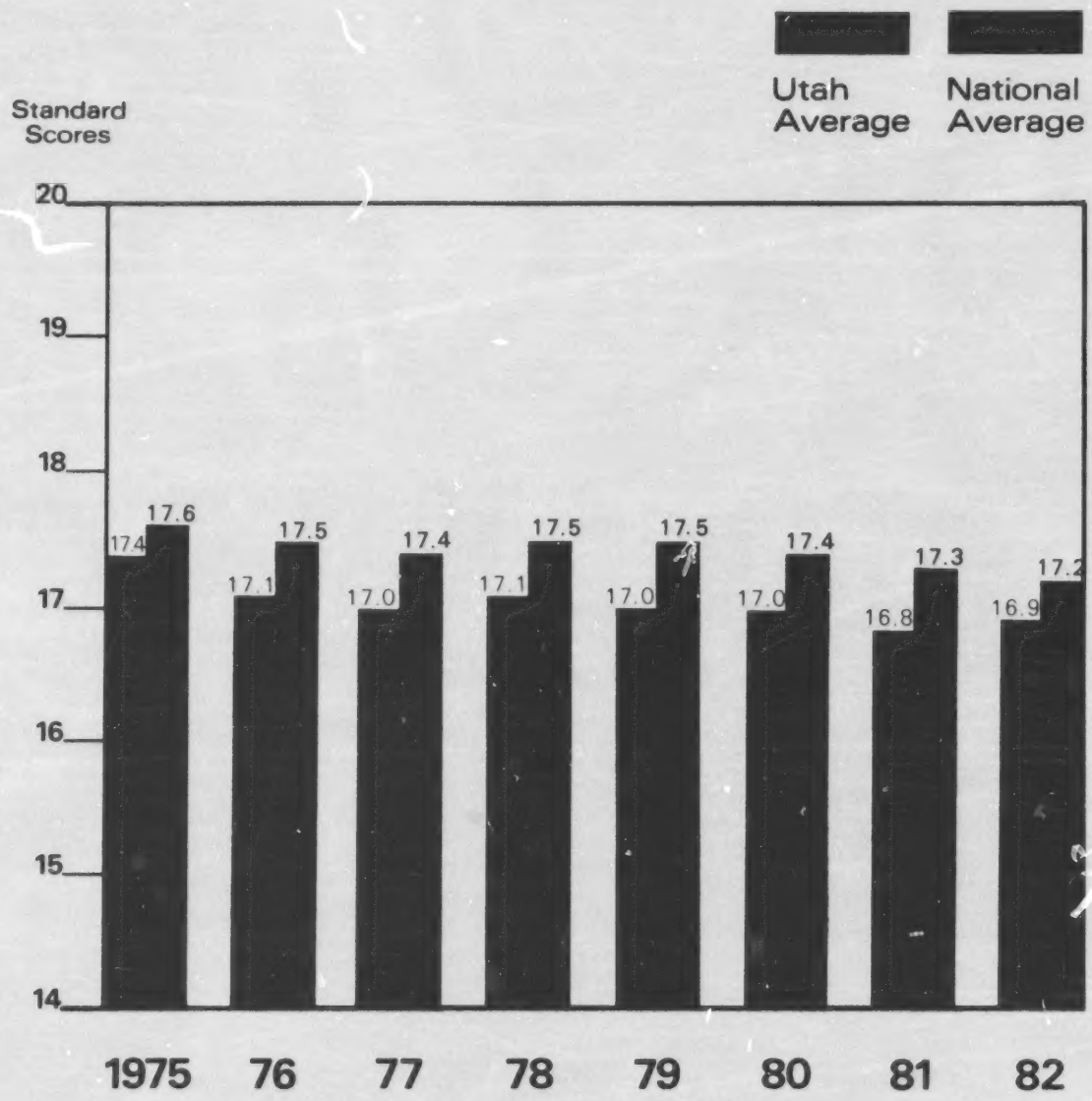
Utah versus National ACT English Average Scores for College-bound High School Students



Source: ACT High School Profile Reports 1975-1982

EXHIBIT 2

Utah versus National ACT Mathematics Average Scores for College-bound High School Students



Source: ACT High School Profile Reports 1975-1982

Social Studies - Exhibit 3. The performance of the Utah students on the ACT social studies test has risen from a low of 16.8 in 1976 to a high of 17.5 for the 1982 group of test-takers. In every year since 1977, the Utah average has equalled or exceeded that of the national sample with the Utah group showing a slight advantage in performance over the national sample in 1982. As is the case with most other score areas of the ACT, both national and Utah social studies scores are lower in the mid to late 70's than they were earlier in the decade.

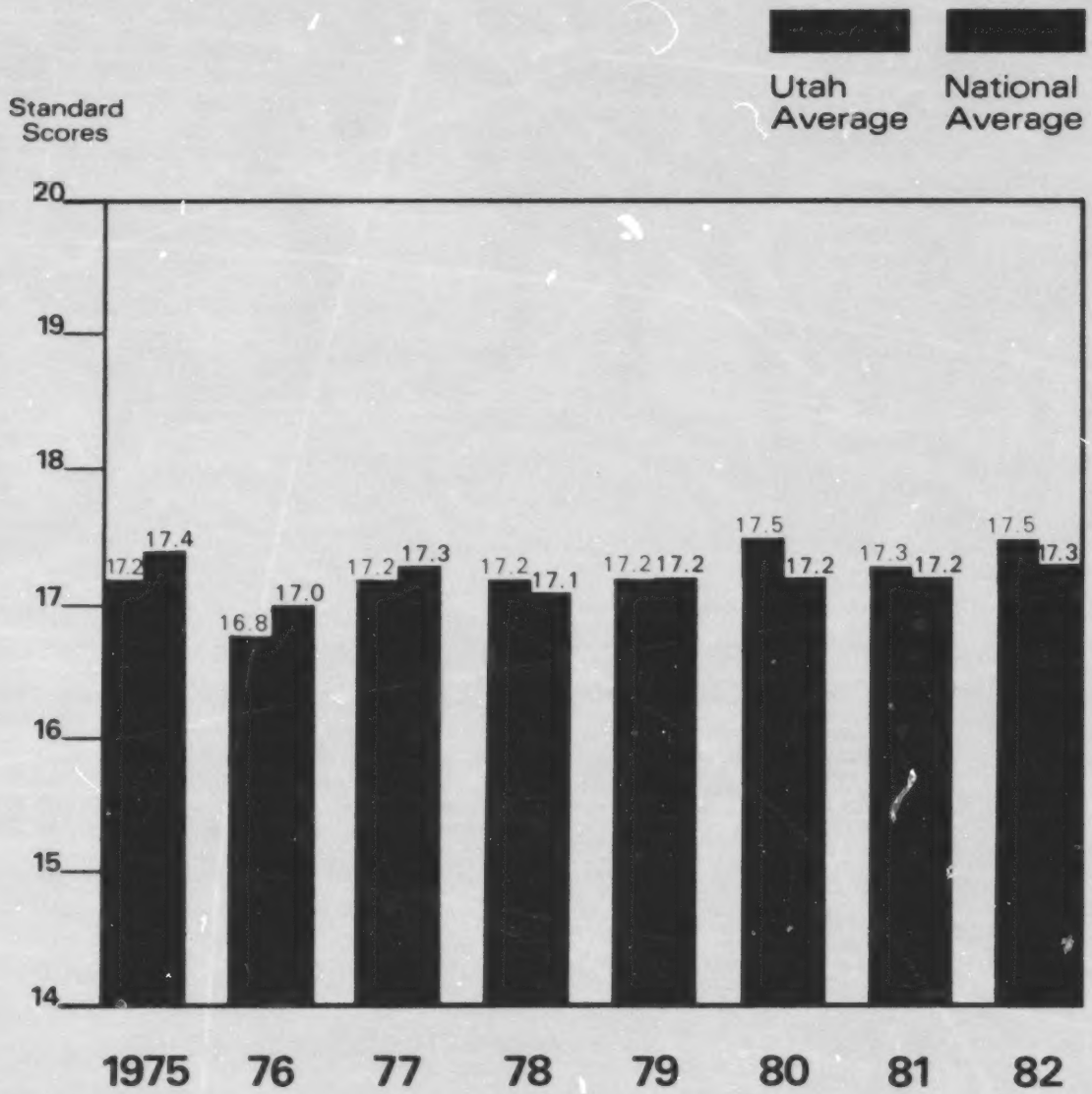
Natural Science - Exhibit 4. Utah students have traditionally shown performance superior to that of the national norm group on the ACT natural science test. For the most recent eight years, as shown in Exhibit 4, the Utah scores exceed that of the national group in every year except 1976, when the two groups were equal. Looking even further, a twelve-year analysis shows the Utah students out-performing the national norm group in eleven of twelve years, with 1976 showing equivalent performance levels.

Composite Achievement - Exhibit 5. Exhibit 5 shows the performance of the Utah and national groups on the ACT composite score which is a combination of all ACT achievement tests. The profile displayed in Exhibit 5 is one of very similar performance for the state and the nation for the eight-year period shown. As would be expected from an analysis of the previous tests which are components of the composite, the Utah scores show relative stability from 1977 through 1982 after a rather dramatic decline from 1975 to 1976.

An examination of each of the tests comprising the ACT battery shows that for English and social studies, as well as the composite score, Utah and national performance has been almost identical over the eight-year period shown in Exhibits 1 through 5. On the mathematics test, the

EXHIBIT 3

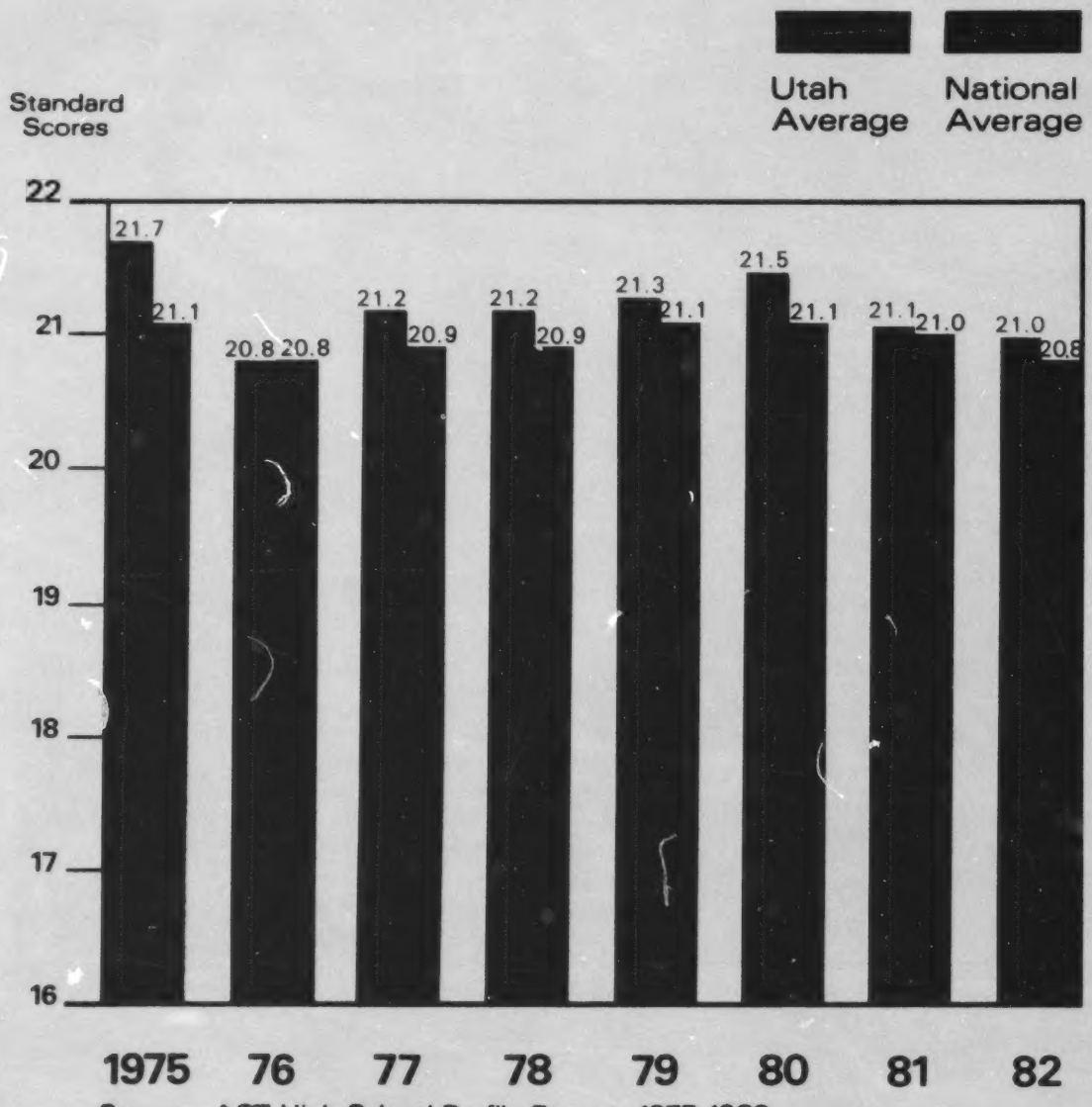
Utah versus National ACT Social Studies Average Scores for College-bound High School Students



Source: ACT High School Profile Reports 1975-1982

EXHIBIT 4

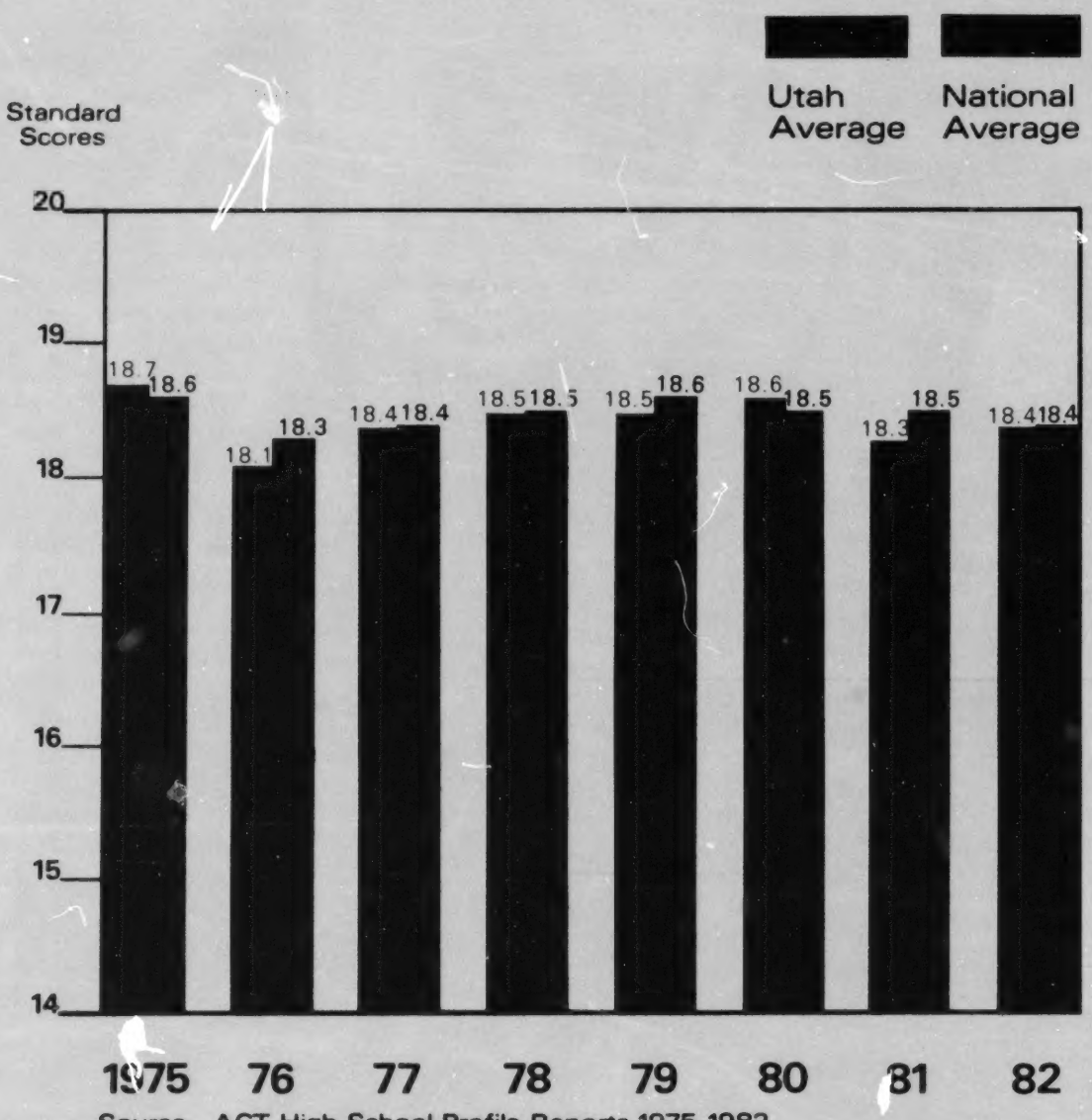
Utah versus National ACT Natural Science Average Scores for College-bound High School Students



Source: ACT High School Profile Reports 1975-1982

EXHIBIT 5

Utah versus National ACT Composite Average Scores for College-bound High School Students



Source: ACT High School Profile Reports 1975-1982

performance of Utah students has been consistently lower than that of the national sample over the same eight-year period. Results on the natural science test, on the other hand, have revealed a rather consistent higher level of performance for Utah students tested over a very long period of time. As has been pointed out previously, both Utah and national score levels have declined in all areas of the test from the performance levels of the early 1970's.

Percentages of Students Scoring In Various ACT Test Score Intervals - Exhibit 6. Exhibit 6 presents an analysis of the percentage of Utah and national ACT test takers scoring in the ACT's four major intervals for 1982. Interestingly, the percentages of Utah and national students in the top two ACT intervals are virtually identical for every area tested except mathematics. Indeed the mathematics score is the only area where the percentage of students scoring in a particular interval differs to any degree for the two groups. An examination of the mathematics score shows that 3% more of the Utah group score in that test's lowest interval in 1982 than is the case for the national group. Conversely, 2% more of the national group score in the test's highest interval. A careful examination of these percentages is warranted in view of changing standards for college admissions based on ACT scores.

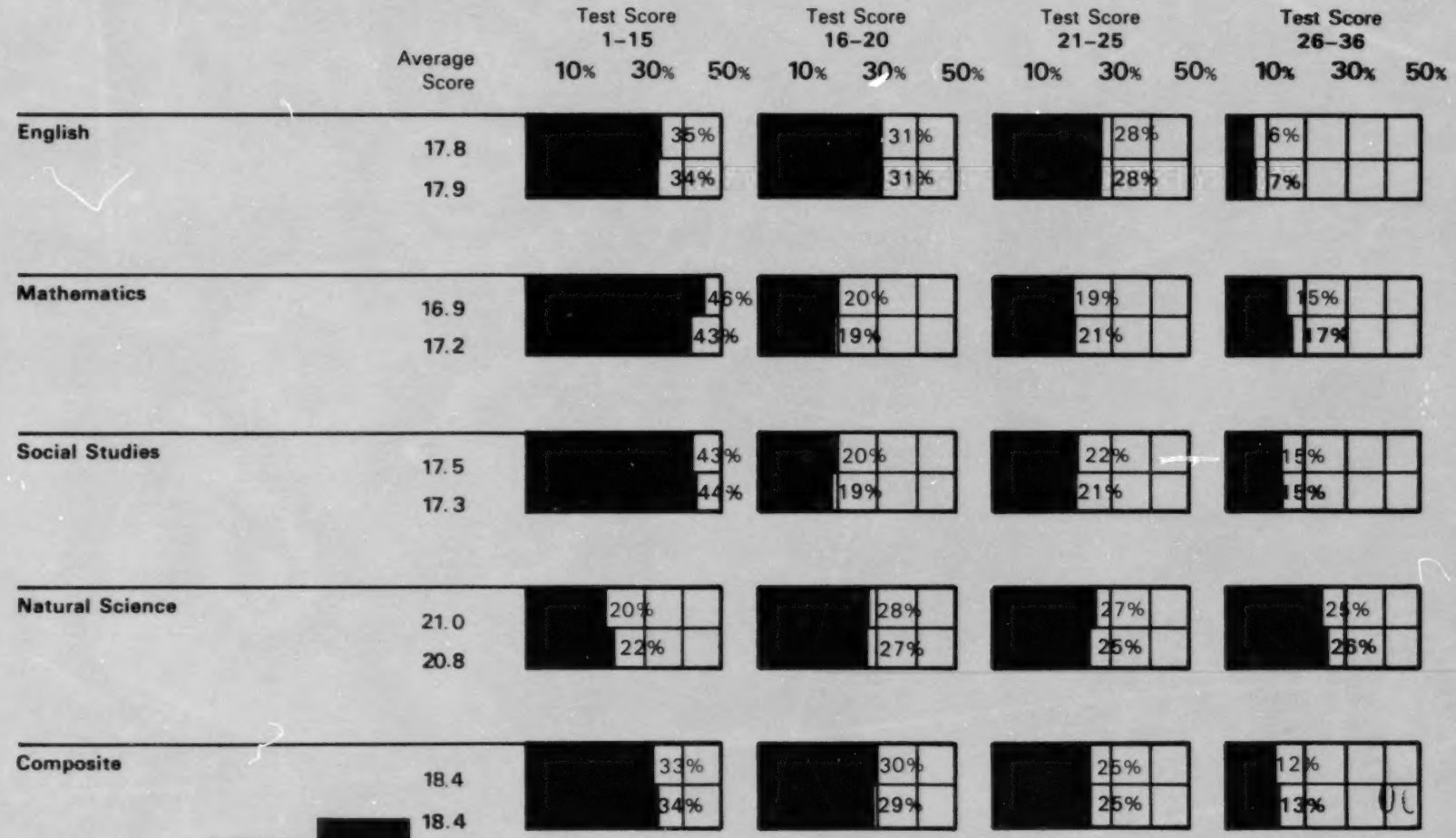
Differences Between Selected Groups on the ACT Achievement Tests

Some important differences between the average scores of various groups of students taking the ACT have emerged both in the state and national results. Some of the differences with the most implications are discussed below.

Sex Differences in the ACT Achievement Scores - Exhibit 7. Exhibit 7 contrasts the scores of male and female students taking the ACT in 1982 for

EXHIBIT 6

Percentages of Utah Students Scoring in Various ACT Test Score Intervals Compared to National ACT Sample, 1982



Source: ACT High School Profile Reports 1982

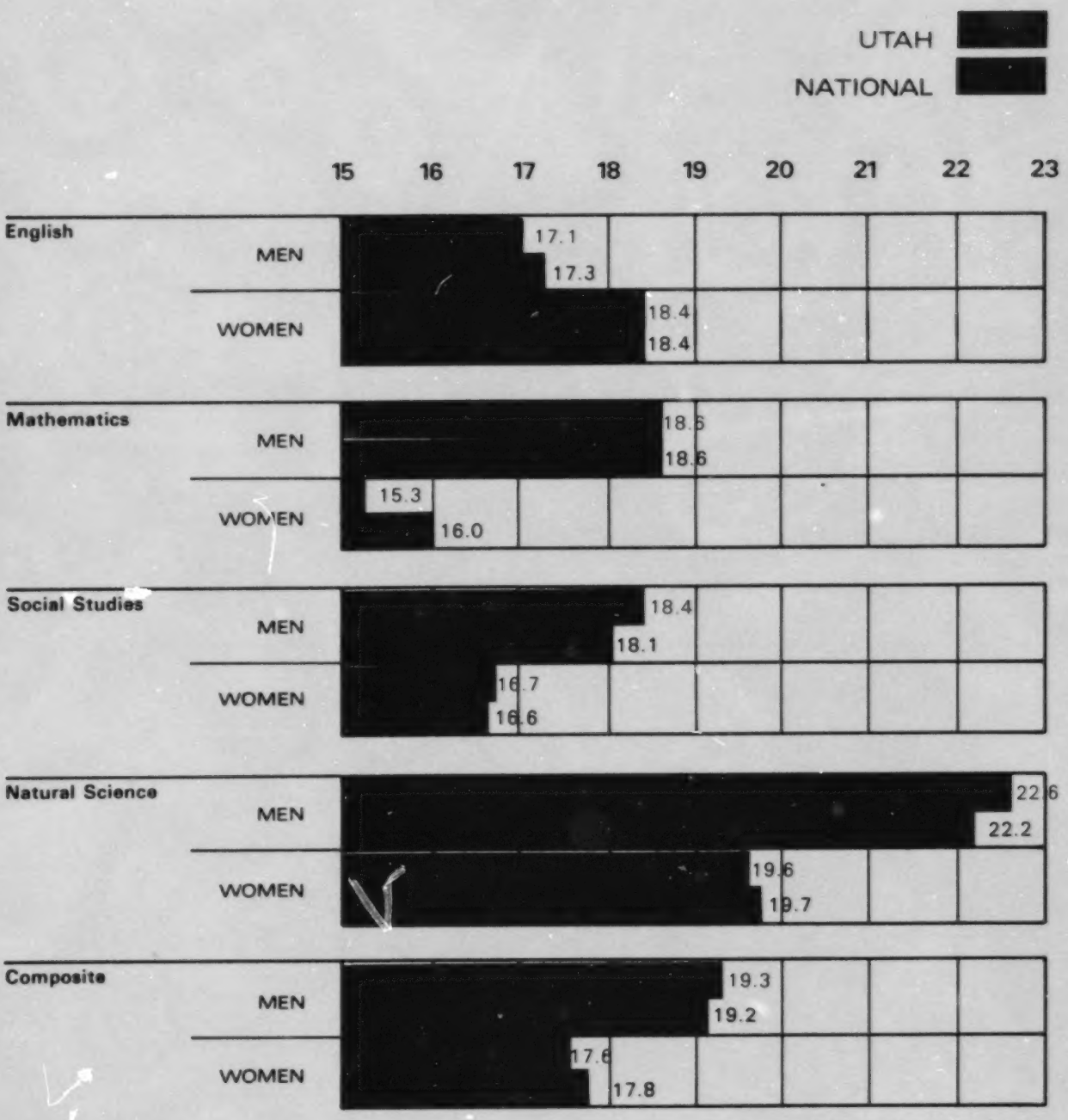
both Utah and the nation. The Exhibit is indicative of a consistent pattern of differences between the scores of males and females taking the ACT which has emerged over more than 10 years in both national and state results. This pattern finds females scoring at higher levels on the English test, while males demonstrate superior performance in mathematics, social studies, natural science, as well as the composite score. Differences between the scores of men and women are most profound in the mathematics and natural science area for both state and national results. In general, the scores of Utah males are equal to or higher than those of the national male norm group in every area except English. Conversely, the scores of Utah females are lower than those of the national female norm group in mathematics, natural science and the composite score, and slightly higher in social studies. The largest state/national discrepancy on the Exhibit is that between Utah and national women on the mathematics test, with Utah women scoring nearly a full point lower than the national sample.

Other Group Differences in the National ACT Sample. In results provided by ACT for its 1981 national sample, some other informative group differences were apparent. For example, an analysis of test scores by ethnic group shows that, for the 1981 national sample, oriental Americans had the highest scores (19.9), followed by caucasians (19.3), Mexican Americans (14.5), American Indians (14.3), and blacks (12.3).

Students in larger high schools (class sizes of 400 and above) tended to have higher ACT scores than students in high schools with smaller enrollment. In examining the scores of students with various career intentions, the highest ACT scores tended to be achieved by students contemplating entering such fields as medicine, mathematics, and physical science, while lower scores were achieved by those intending to major in such areas as agriculture, social work, law enforcement, and education.

EXHIBIT 7

Average ACT Score of Utah Male and Female Students Compared to the National ACT Sample, 1982



Source: ACT High School Profile Reports 1982

The very small numbers of students involved in these kinds of analyses do not permit a meaningful examination of many of these variables for the state results. However, the national results are at least indicative of how similar groups would score in the state of Utah.

Results From the ACT Student Profile Section

In addition to the results from the ACT achievement tests which have been presented above, the American College Testing Program furnishes a variety of other information about the high school students who are tested every year. This additional information, contained in the ACT student profile section, provides a variety of biographical information, data about educational and vocational plans, out-of-class accomplishments, and student evaluations of their high school education.

Out-of-Class Accomplishments - Exhibit 8. Exhibit 8 presents the average number of high school out-of-class accomplishments reported by Utah students taking the ACT as compared to the national random sample for 1982. The specific items which comprise these questions represent rather high levels of accomplishment in the nine areas measured which include art, athletics, community service, leadership, music, science, speech, work experience, and writing. These activities are not only important out-of-class pursuits, but also should be viewed as having significant educational relevance as well. Each unit (1.0) in Exhibit 8 is equal to one major accomplishment in a particular area.

Analysis of this Exhibit shows that the total group of Utah students tested reported larger numbers of out-of-class accomplishments than the national comparison group in eight of the nine areas presented. Work experience continued to be a strong point of emphasis for Utah students as did community service.

EXHIBIT 8

Average Number of High School Out-of-Class Accomplishments of Utah Students Compared to the National ACT Sample, 1982

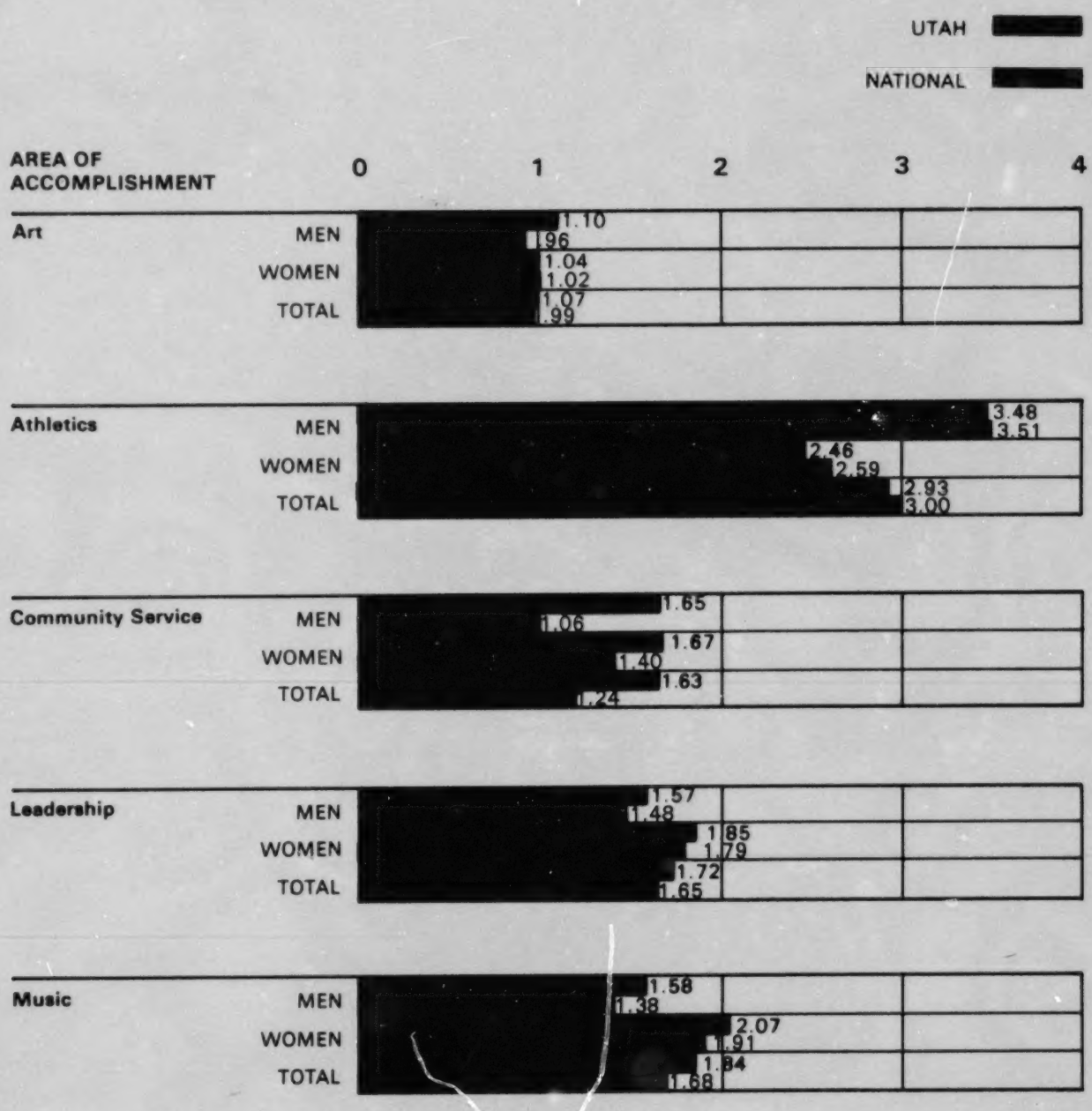


EXHIBIT 8

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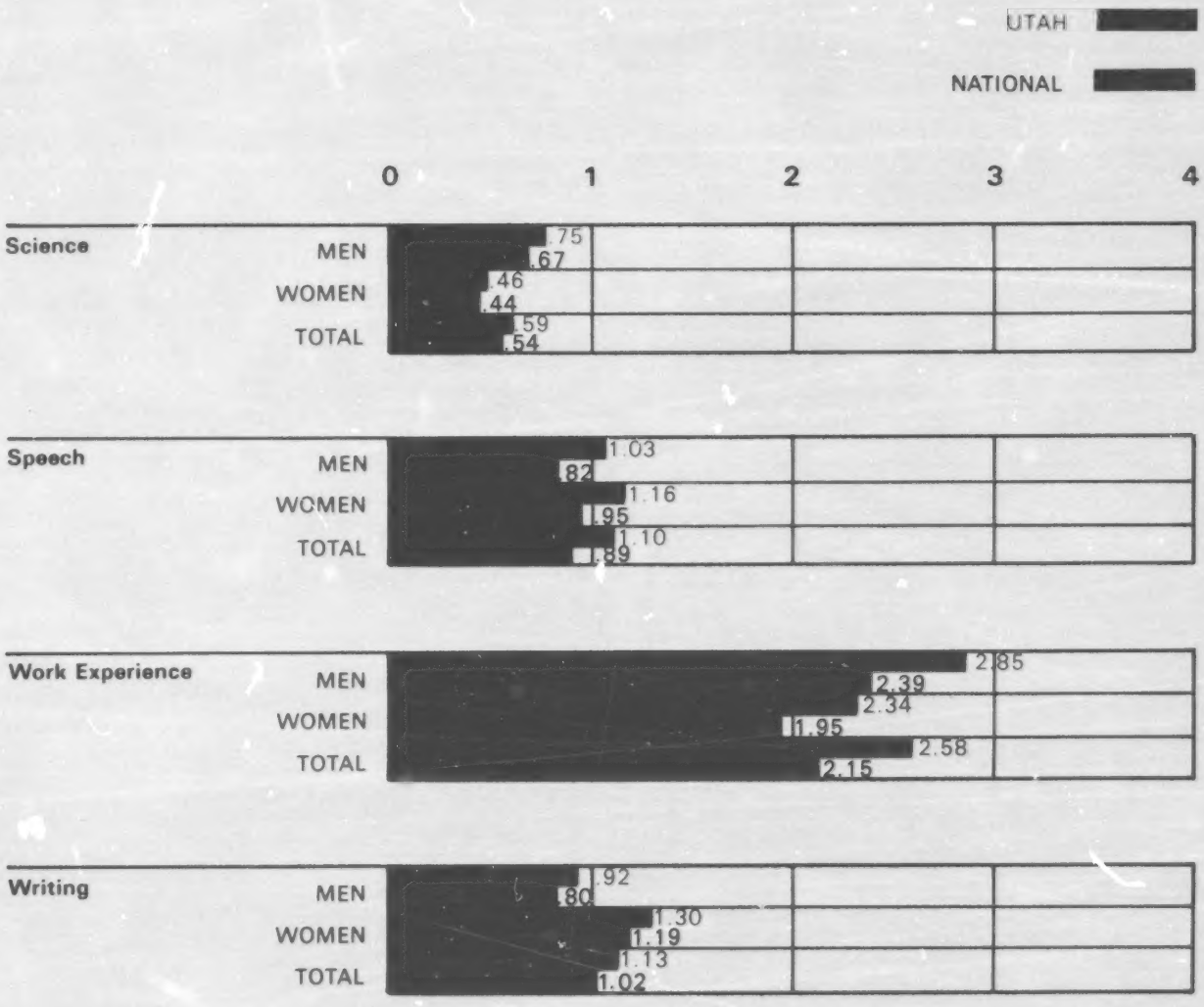


Source: ACT High School Profile Reports 1982

Research conducted by ACT and others demonstrates that, while there is no appreciable relationship between out-of-class accomplishments and high school academic performance, there do seem to be relationships between participation in such activities in high school and success "in the real world" after college. Thus, the significance of these activities lies more in their predictive implications for career success than any immediate forecasting power they might have for academic success in college.

Expressed Adequacy of High School Education - Exhibit 9. As another portion of the ACT student profile section, students were given the opportunity to rate the overall adequacy of their high school experience. Initially students had an opportunity to classify their personal high school program as either business-communication, vocational-occupational, college preparation, or general. The results depicted in Exhibit 9 show Utah students rating their high school programs considerably higher than the figures observed for the national norm group. For example, 59% of the Utah students taking a vocational-occupational curriculum, rated their experience as either "good" or "excellent" compared to 51% for the national norm group. One negative feature of this set of evaluations shows slightly higher percentages of Utah students marking the bottom point of the scale than was true for the national comparison group.

In general, the area rated strongest by Utah students was the college preparation program, followed by business-communication, vocational-occupational, and the general category.

Student Satisfaction with Aspects of the Local High School - Exhibit 10. Exhibit 10 is an examination of Utah students satisfaction with specific aspects of their local high school programs. The areas which received the highest ratings by Utah students for 1982 were number and

EXHIBIT 9

Expressed Adequacy of Utah High School Education Compared to National Results According to Curriculum or Program, 1982

Expressed Adequacy	Business Communication		Vocational Occupation		College Preparation		General and Other	
	UTAH	NATIONAL	UTAH	NATIONAL	UTAH	NATIONAL	UTAH	NATIONAL
Excellent	16%	11%	12%	9%	25%	22%	11%	9%
Good	48%	45%	47%	42%	47%	48%	46%	42%
Average	22%	31%	26%	35%	14%	19%	29%	36%
Below Average	5%	5%	6%	7%	3%	3%	6%	7%
Very Inadequate	10%	8%	9%	8%	10%	8%	8%	7%
Number of Utah Students	1,484		1,760		5,428		4,145	
Number of National Students	8,556		6,897		47,462		14,761	

Source: ACT High School Profile Reports 1982

EXHIBIT 10

Utah versus National Student Satisfaction with Various Aspects of Local High Schools, 1982

AREA	Satisfied No Change Necessary		Pretty Much Neutral		Dissatisfied, Improvement Needed		No Experience	
	UTAH	NATIONAL	UTAH	NATIONAL	UTAH	NATIONAL	UTAH	NATIONAL
Classroom Instruction	57%	62%	29%	24%	14%	14%	1%	1%
No. and Variety of Course Offerings	60%	56%	18%	15%	21%	28%	1%	1%
Grading Practices and Policies	45%	56%	30%	26%	25%	17%	1%	1%
No. and Kinds of Tests Given	51%	56%	38%	32%	10%	11%	1%	1%
Guidance Services	51%	58%	27%	20%	20%	20%	2%	2%
School Rules, Regulations, & Policies	43%	43%	25%	24%	31%	32%	1%	1%
Library or Learning Center	54%	58%	24%	23%	19%	18%	2%	2%
Laboratory Facilities	39%	45%	29%	25%	18%	21%	13%	9%
Provisions for Special Help in Reading, Math, etc.	33%	35%	24%	20%	11%	16%	31%	29%
Provisions for Academically Outstanding Students	60%	50%	21%	21%	10%	17%	9%	12%
Emphasis on Career Education & Planning	46%	43%	29%	25%	20%	25%	4%	7%

Source: ACT High School Profile Reports 1982

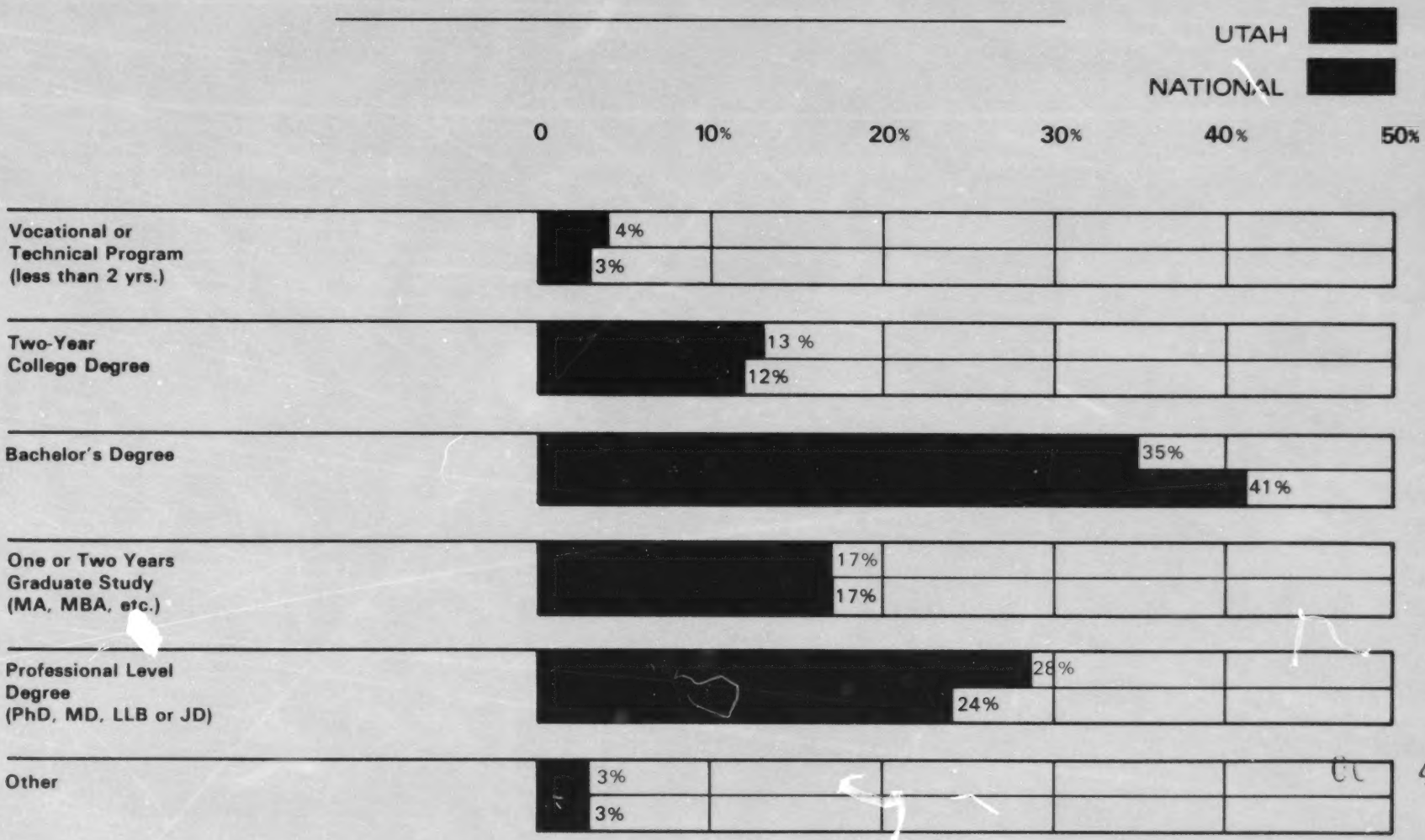
variety of course offerings, provisions for academically outstanding students, and classroom instruction. Areas seen as relatively weaker by Utah students were provisions for special help in math and reading, school laboratory facilities, and grading practices and policies. Utah students were more satisfied than the national norm group on three of the eleven areas rated, while less satisfied on seven areas with one receiving equal marks. Areas where ratings of the national group were markedly more positive than Utah students were grading practices and policies, guidance services, and laboratory facilities.

Educational Degree Aspirations - Exhibit 11. Exhibit 11 depicts the degree aspirations of Utah high school students as they compared to the national ACT sample for 1982. The results here maintain a trend which has been apparent in this area for several years. Specifically, more Utah students, than is the case nationally, are interested in pursuing a vocational or technical program, a two-year college degree, and in particular, a professional degree such as the Ph.D. or M.D. A significantly lower percentage of Utah students are interested in the terminal bachelor's degree than is true for the national sample. Thus, a relatively high number of Utah students have educational aspirations far above the four-year college degree, accounting for the difference between the state and national profile on the bachelor's and professional level degrees.

Proposed Educational Major - Exhibit 12. Students completing the ACT high school profile section also had an opportunity to indicate their preference for a college major. Exhibit 12 presents those proposed educational majors for both Utah students and the national norm group. By far the most popular choices depicted in Exhibit 12 are the business and commerce area and the health professions. Other relatively high

EXHIBIT 11

Educational Degree Aspirations of Utah High School Students Compared to National ACT Sample for 1982



Source: ACT High School Profile Report 1982

EXHIBIT 12

Proposed Educational Major of Utah High School Students Compared to National ACT Sample, 1982

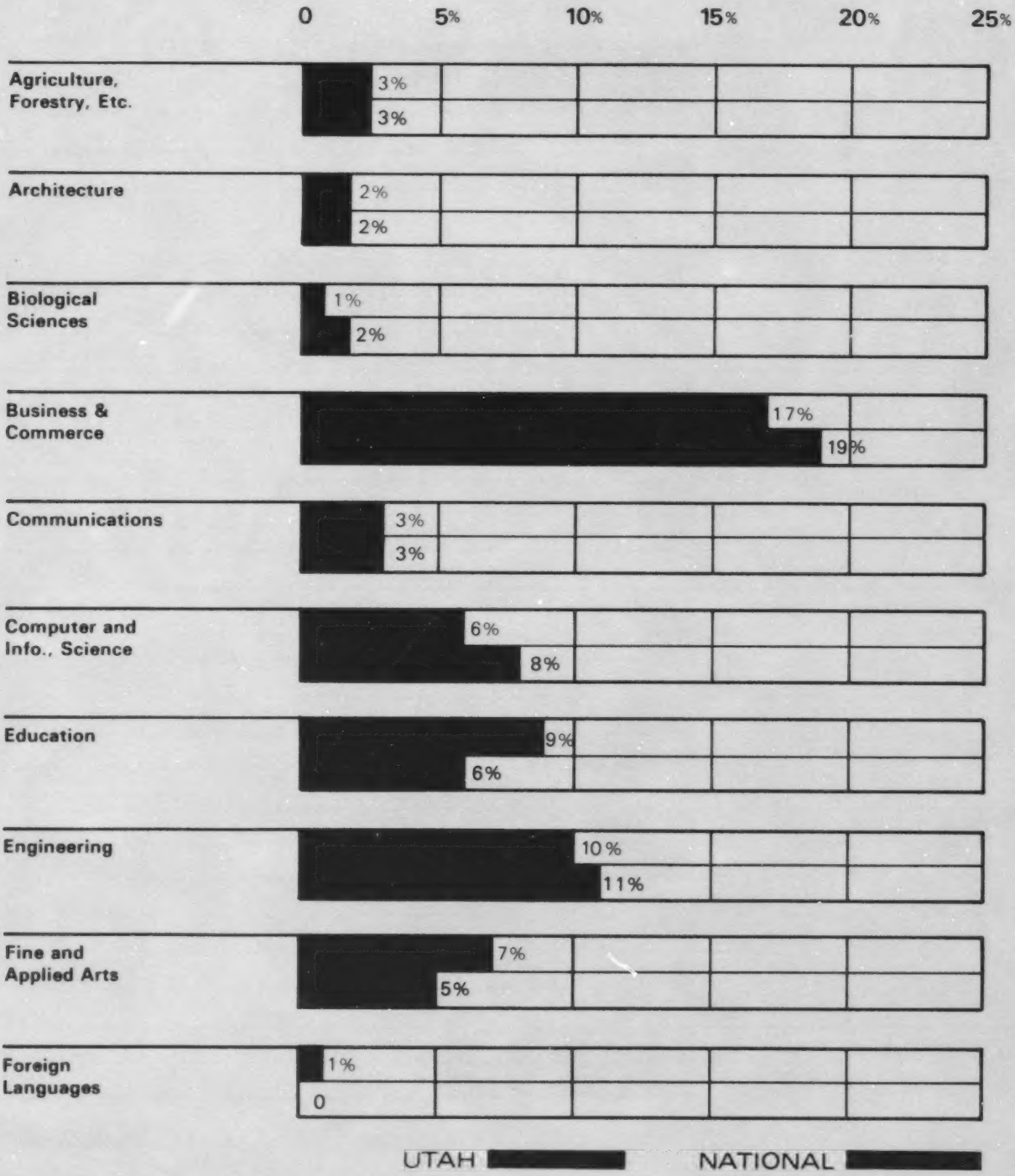


EXHIBIT 12

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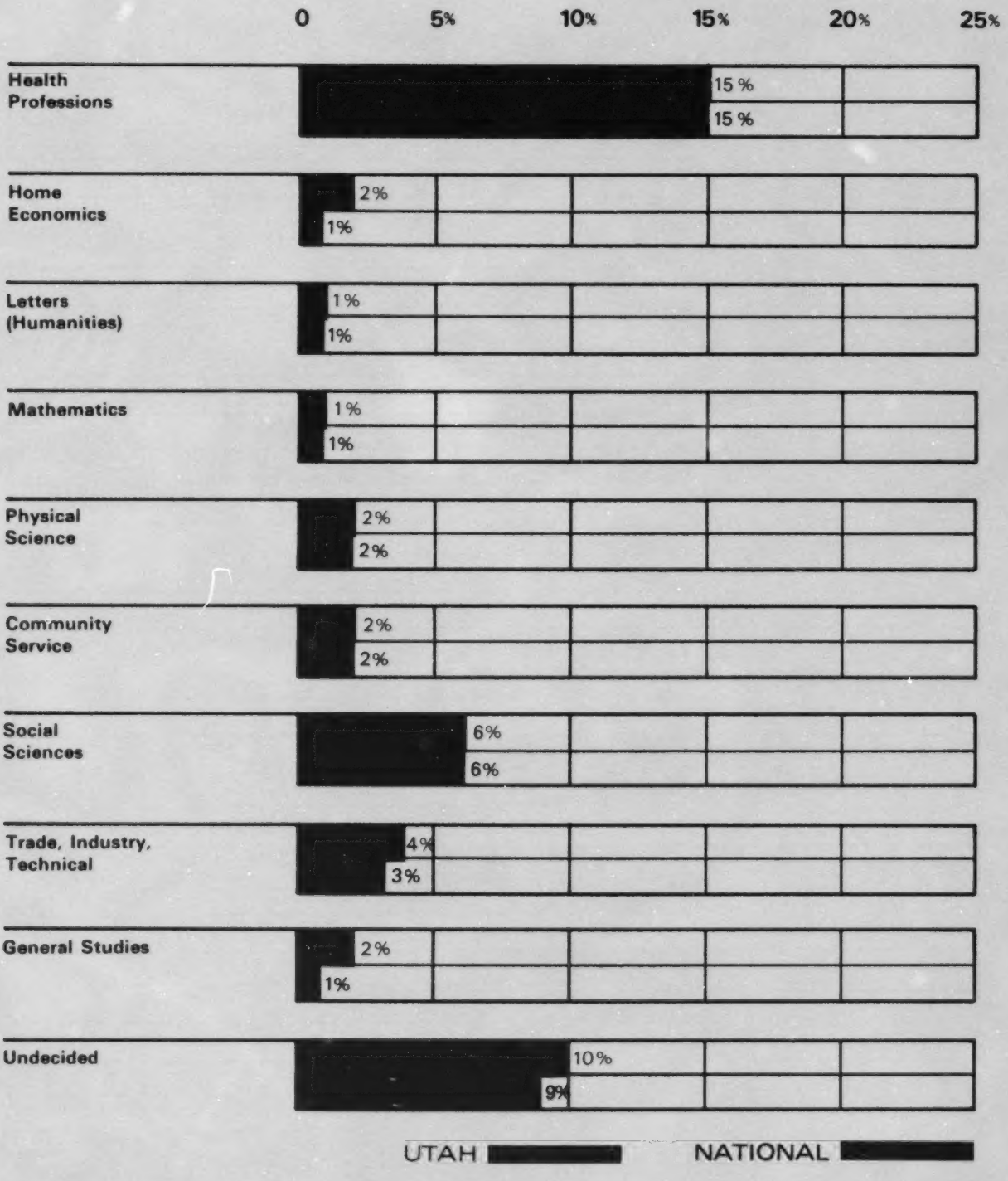


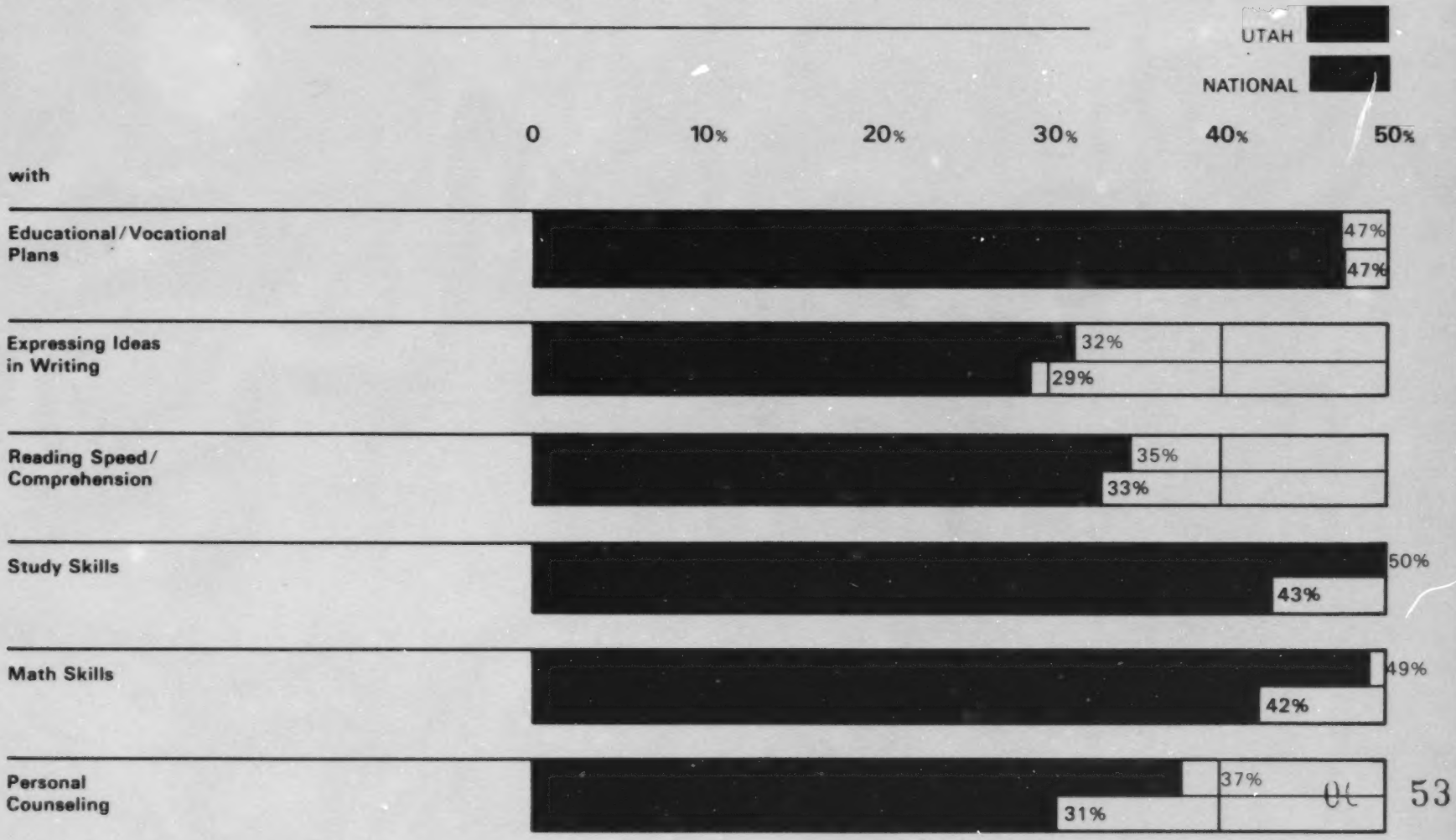
Source: ACT High School Profile Report 1982

percentages fall in engineering and education. The profiles of choices for the Utah students follow rather closely the national figures with the exception of business and commerce where higher percentages of national students have elected this major, and computer and information science where the same pattern is apparent. Conversely, higher percentages of Utah students are proposing majors in education and home economics, as well as fine and applied arts.

Need for Educational Assistance - Exhibit 13. Exhibit 13 provides a comparison of Utah students to the national sample in respect to the percentage of students taking the ACT who requested educational assistance in various areas. As has been true in the past, higher percentages of Utah students are requesting assistance in virtually all of the areas listed with the exception of educational/vocational plans. The areas where significantly higher percentages of Utah students request help are study skills, math skills, and personal counseling. It is significant that these percentages have not changed radically over a rather extended period of time. On the positive side, while high percentages of both the Utah and national samples request assistance with educational and vocational planning, the Utah percentage has shrunken somewhat in this area. Still, the broad picture here is that very high percentages of college-bound Utah students could benefit from increased emphasis in several of the areas described above.

EXHIBIT 13

Percentage of Utah Students Who Requested Educational Assistance Compared to the National ACT Sample, 1982



Source: ACT High School Profile Report 1982

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SCHOLASTIC APTITUDE TEST (SAT) RESULTS

The Scholastic Aptitude Test (SAT), administered by the College Entrance Examination Board, is a second major college entrance examination taken by students seeking to enter college in this country. Nationally, nearly one million students take the SAT annually. In the state of Utah, however, where no higher education institution requires the SAT exclusively, only 748 students took the SAT in 1982. This number is a large percentage increase from previous years, but as a percentage of the total number of students in a given graduating class in the state of Utah this number is fairly small - 4% as opposed to the 65% who take the ACT. Students in Utah who do take the SAT often aspire to attend colleges or universities in the eastern United States. Thus, this group of test-takers is far more select than is the group taking the ACT in Utah.

The College Board publication, "Taking the SAT," describes the test as follows:

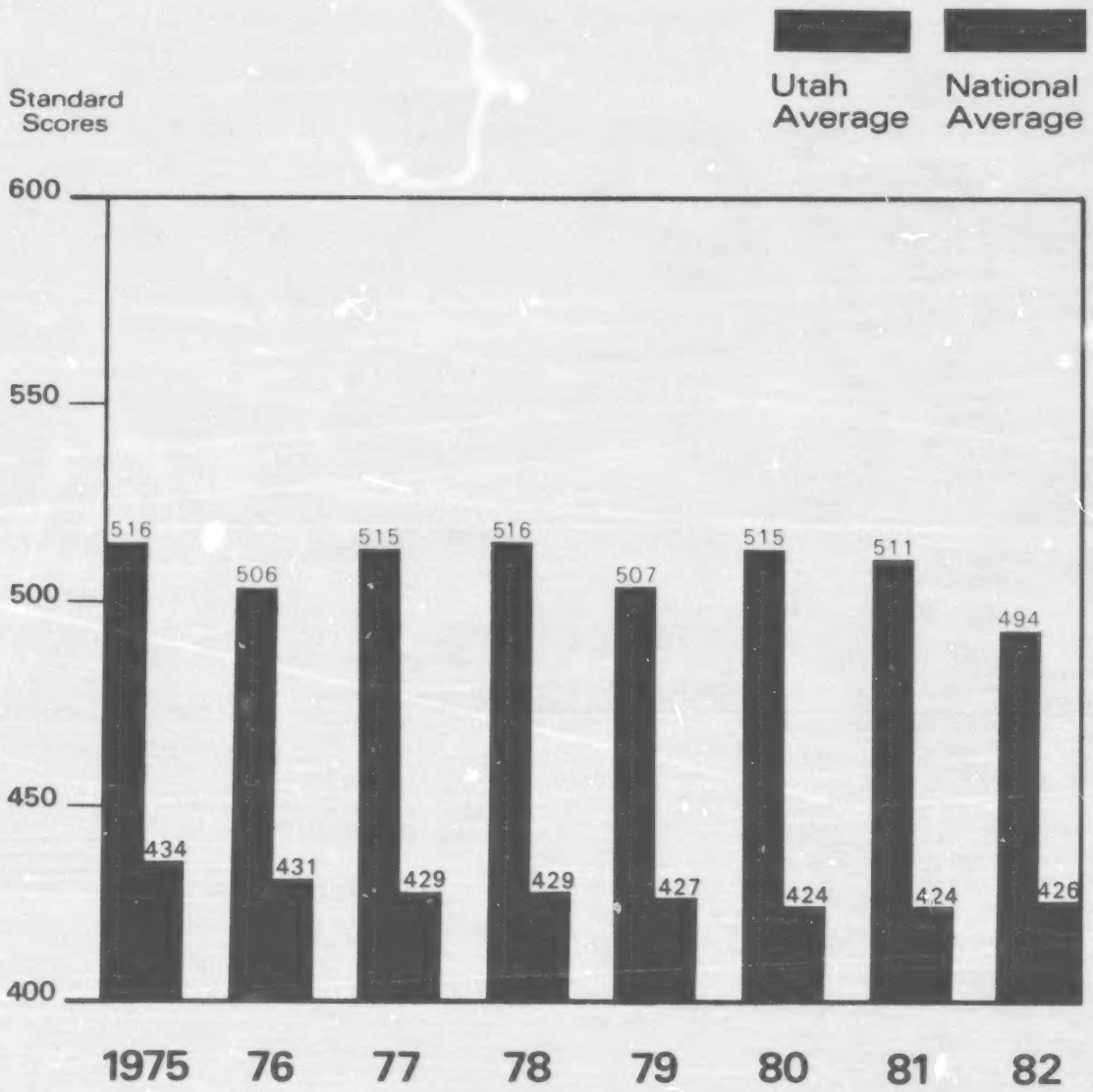
> The SAT is a multiple-choice test made up of separately timed verbal and mathematical sections. Verbal questions measure your ability to understand what you read and the extent of your vocabulary. Mathematical questions measure your ability to solve problems involving arithmetic reasoning, algebra, and geometry.
>
> SAT - Verbal Sections. There are four types of questions in the verbal sections of the SAT: twenty-five antonyms, fifteen analogies, twenty sentence completions, and twenty-five questions based on reading passages.
>
> SAT - Mathematical Sections. Some questions in the mathematical sections of the SAT require you to apply numerical, graphic, spacial, symbolic and logical techniques to situations familiar to you; these may be similar to exercises in your textbooks. Other questions may require you to do some original thinking. The mathematical preparation expected is a year of algebra and some geometry.

Utah and National SAT Average Scores - Exhibits 14 and 15

As was indicated above, any comparison of Utah and national SAT average scores must be made with full knowledge that the Utah students

EXHIBIT 14

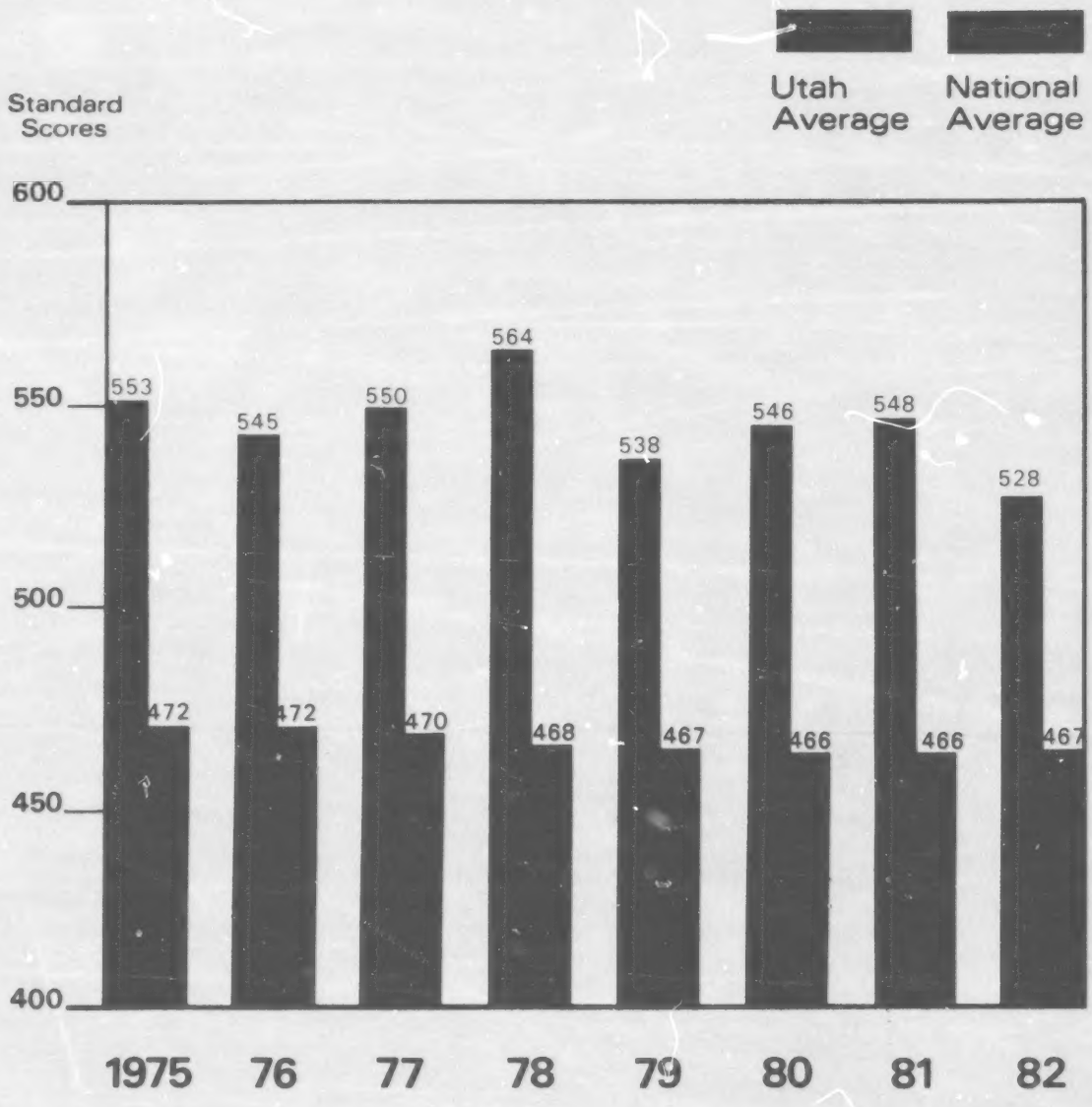
Utah vs. National SAT Average Verbal Scores



Source: College Board ATP Summary Reports 1975-1981

EXHIBIT 15

Utah vs. National SAT Average Mathematics Scores



Source: College Board ATP Summary Reports 1975-1981

taking the test are a much more select group than the national group of seniors taking the test. For the period of time shown in Exhibits 14 and 15, the highest number of Utah students to take the SAT was 748 in the most recent period, 1982. At the same time, nearly one million high school seniors took this same test nationally. Exhibits 14 and 15 document the gradual decline in national SAT verbal and mathematics scores which began nearly 10 years earlier and continued into the late 70's. Due to the small number of Utah students taking the SAT, the averages for the Utah group fluctuate more than the national figures. As would be expected from knowledge of the composition of the Utah and national groups, the Utah scores are substantially higher on both the verbal and mathematics test than are those for the national comparison group. The Utah scores are also much higher than those for the states comprising the western region of the United States; this is largely attributable to the smaller percentage of Utah seniors taking the test.

Average SAT Scores by State for 1982 - Exhibit 16. For the 1982 scores, the College Board has released a set of state figures depicting both the SAT verbal and mathematics averages as well as the percentage of graduates for each state who take the SAT. Exhibit 16, which summarizes this College Board-released information, shows the dramatic effect of the percentage of graduates taking the test on mean scores. States with a very high percentage of graduates taking the test, such as Connecticut, score much lower than states like Iowa, with very small percentages of students taking the test. Again, a demonstration that the selectivity or non-selectivity of a particular sample of test-takers has a profound impact on average scores.

EXHIBIT 16

Average SAT Scores by State for 1981–1982

	Percentage Graduates Taking SAT	SAT Verbal	SAT Math
Alabama	6	463	501
Alaska	31	446	477
Arizona	11	470	511
Arkansas	4	480	519
California	36	425	474
Colorado	16	468	515
Connecticut	69	432	464
Delaware	42	432	465
Florida	39	426	463
Georgia	51	394	429
Hawaii	47	392	465
Idaho	7	482	513
Illinois	14	462	515
Indiana	48	407	453
Iowa	3	516	572
Kansas	5	500	545
Kentucky	6	475	510
Louisiana	5	470	505
Maine	46	427	463
Maryland	50	425	464
Massachusetts	65	425	463
Michigan	10	459	514
Minnesota	7	485	543
Mississippi	3	479	509
Missouri	10	465	510
Montana	8	487	546
Nebraska	5	493	552
Nevada	18	436	481
New Hampshire	56	443	482
New Jersey	64	416	453
New Mexico	8	480	517
New York	59	429	467
North Carolina	47	396	431
North Dakota	3	505	563
Ohio	16	456	502
Oklahoma	5	483	518
Oregon	40	435	473
Pennsylvania	50	424	461
Rhode Island	59	420	457
South Carolina	48	378	412
South Dakota	2	522	553
Tennessee	9	480	519
Texas	32	415	453
Utah	4	494	528
Vermont	54	433	471
Virginia	52	426	462
Washington	19	468	514
West Virginia	7	462	506
Wisconsin	10	476	535
Wyoming	5	484	533

PRELIMINARY SCHOLASTIC APTITUDE TEST (PSAT) RESULTS

The Preliminary Scholastic Aptitude Test is taken in October by over one million college-bound high school juniors across the United States. The PSAT, or alternately the National Merit Scholarship Qualifying Test (NMSQT), is taken by students who hope to compete successfully for scholarships sponsored by the College Board.

In structure, the PSAT is reasonably similar to the Scholastic Aptitude Test (SAT), with a verbal section measuring antonyms, sentences, analogies, and reading comprehension; and a math section measuring "regular math", and quantitative comparison.

The number of Utah students taking the PSAT has risen rather substantially over a ten-year period. The 1981 group of PSAT test-takers in Utah consisted of 3,500 students. Thus, while the PSAT sample for Utah is not as select as the SAT, it still might be expected to be considerably more select than that of many states.

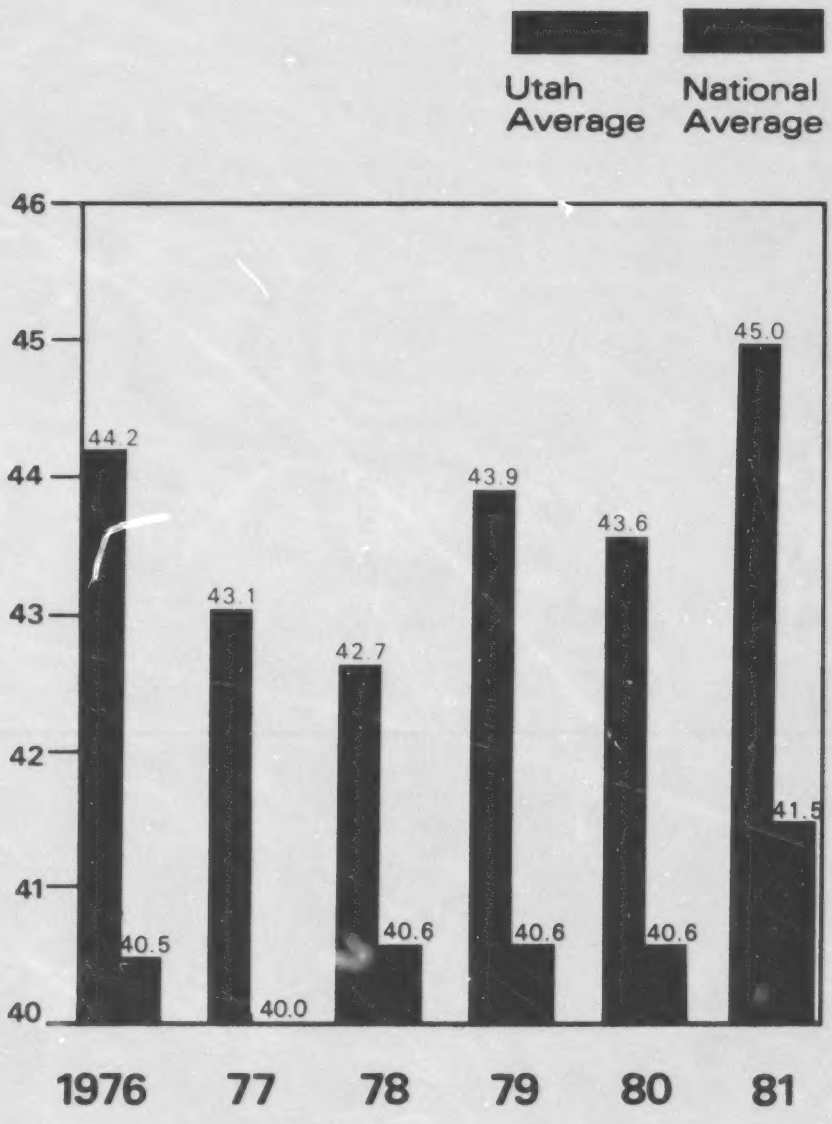
PSAT standard scores range basically between 20 and 80 for a particular student with state or national averages most often between 40 and 50.

PSAT Verbal and Math Results - Exhibits 17 and 18. Exhibit 17 presents the profile of PSAT average verbal scores for Utah and the nation between 1976 and 1981. While national scores have remained relatively stable over this period of time, Utah scores dropped appreciably between 1976 and 1978 and then took a rather dramatic upswing terminating in 1981. A similar recent upward trend was noted in national scores, but the national tendency was not as marked as that observed within the state.

Exhibit 18 presents PSAT average mathematics scores for Utah and the nation. Here the national score levels are again very stable, but Utah scores show more variability. As was noted with the verbal scores, the

EXHIBIT 17

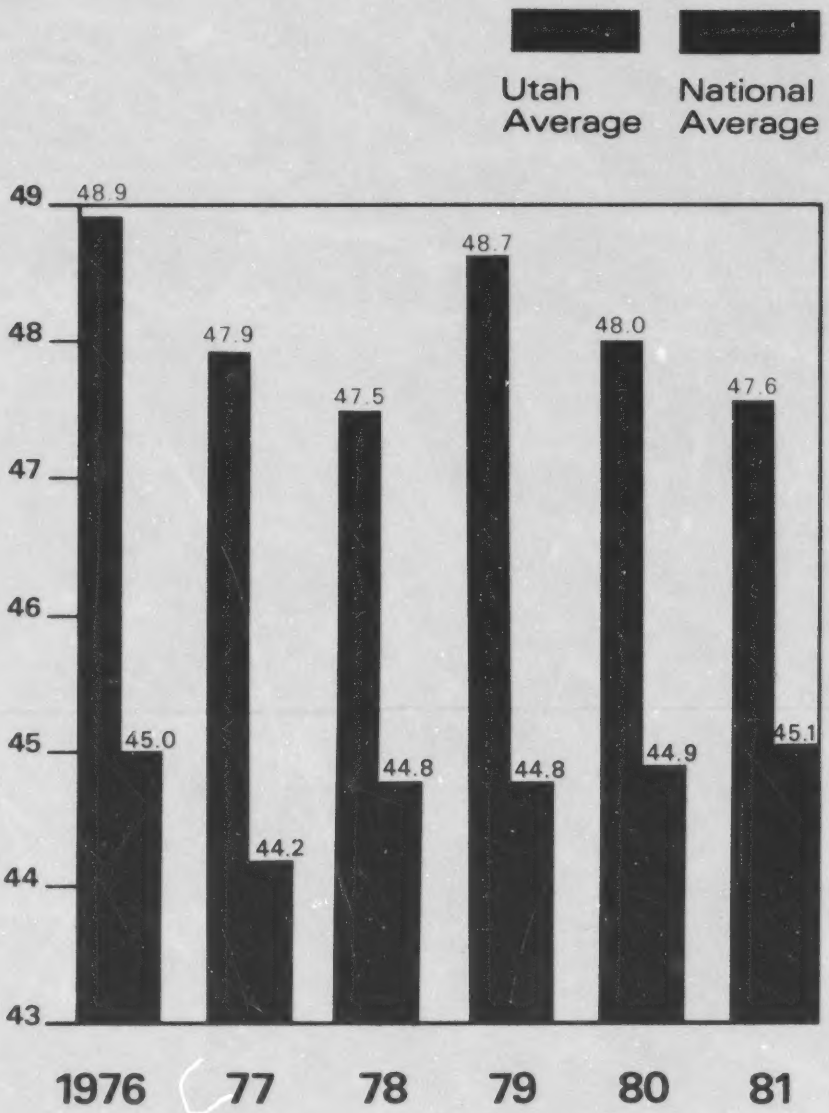
Utah vs. National PSAT Average Verbal Scores



Source: College Board ATP Summary Reports 1975-1981

EXHIBIT 18

Utah vs. National PSAT Average Math Scores



Source: College Board ATP Summary Reports 1975-1981

mathematics area shows profound average differences in favor of the state, but with the state scores peaking in 1979 in mathematics and declining slightly to their present level in 1981. As was true with the verbal scores, the fact that the PSAT, as well as the SAT and ACT, are tests taken by a self-selected sample makes trends more difficult to explain than is the case for tests which are administered to truly representative samples of students.

UTAH STATEWIDE EDUCATIONAL ASSESSMENT PROGRAM RESULTS

The Utah State Legislature has charged the State Board of Education and its staff with the responsibility of mounting a continuous program of educational assessment statewide. The legislature expressed its intent in the Appropriations Act of 1977, in which the State Board of Education was directed to establish a continuing assessment program built on the model used in the first Utah Statewide Educational Assessment conducted in 1975. The second Statewide Assessment was conducted in 1978 with the third in 1981. Present long-range plans call for a major assessment every three years with appropriate instrumentation development, refinement, and reporting activities taking place between the major assessment dates.

The Utah Statewide Educational Assessment program measures key aspects of the student outcomes specified in Goals and General Objectives of Education in Utah. These goals were described in Chapter 1 of the present report. Indicators of five Utah goals were measured in the 1975, 1978, and 1981 Statewide Assessment studies. These included: Intellectual Maturity, Emotional Maturity, Social Maturity, Aesthetic Maturity, and Productive Maturity.

Several different types of information were collected for the three Statewide Assessment studies accomplished to date. The first type, student academic achievement, was measured using the Comprehensive Tests of Basic Skills, Form S. The measurement of the status of Utah students in respect to the noncognitive Utah goal areas, including scales such as academic self-concept, peer relations, and career development was accomplished with carefully developed instrumentation built specifically for the Utah Statewide Assessment program. The 1975, 1978, and 1981 assessments also included efforts to measure demographic characteristics which might

influence student achievement. Measurement devices were also included which collected data on key instructional strategies used by teachers at the elementary level to help students learn. The purposes behind this wide spectrum of measures were: (1) to provide an accurate picture of the achievement of students in Utah's public schools; (2) to provide an indication of how certain critical demographic factors are related to the way students achieve; and (3) to provide some insight into instructional approaches and techniques which may influence student achievement and attitudes.

All three Statewide Assessment studies examined the performance and other characteristics of Utah students in fifth and eleventh grades. Nearly 100 elementary and secondary schools were included in the stratified random samples drawn for the studies. In each year, approximately 4,500 fifth graders and 2,000 eleventh graders were tested.

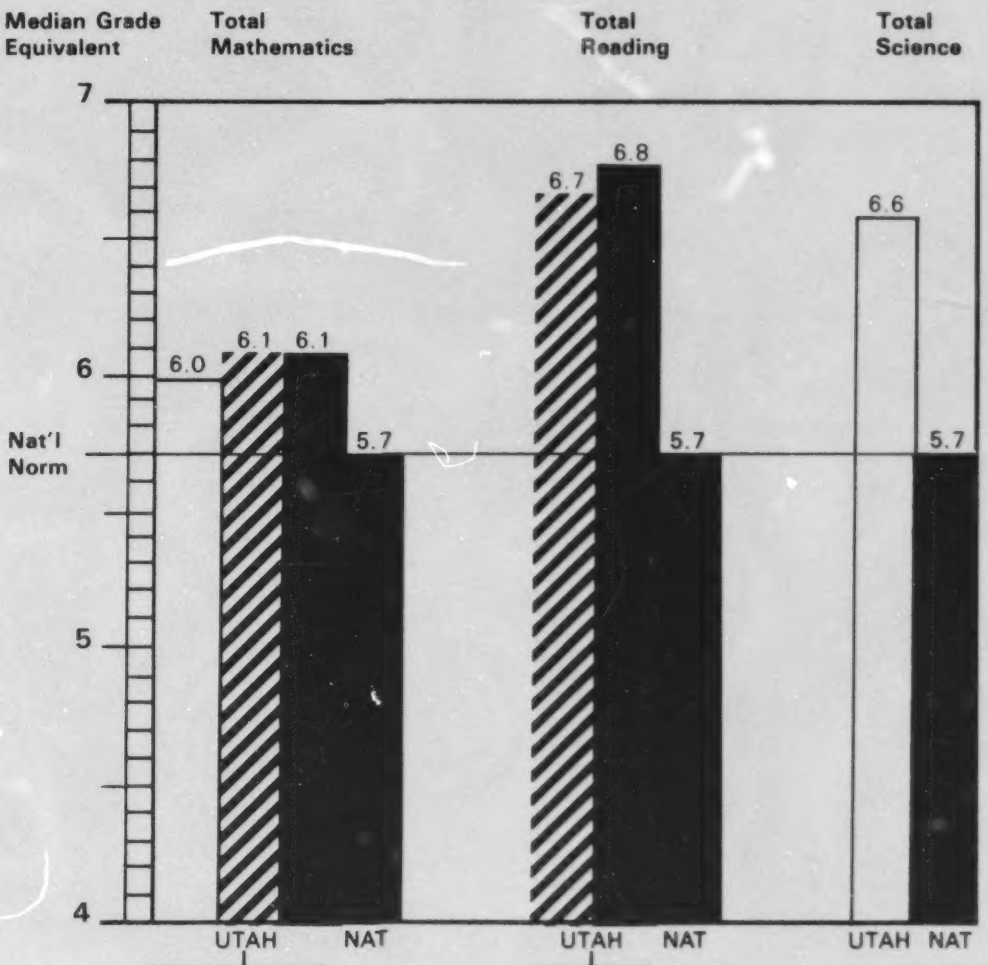
Highlights From the 1975, 1978, and 1981 Assessments

The results from all three of the Utah assessment studies have been made available previously in a variety of reports and presentations. This section will feature highlights from the three assessments.

Mathematics, Reading, and Science Results for Grade 5 - Exhibit 19. Exhibit 19 presents the Comprehensive Tests of Basic Skills (CTBS) total score results for Utah fifth graders and the CTBS national norm group. Median grade equivalent scores were used to allow comparison to the national average for all score areas. The national grade equivalent score was 5.7, reflecting the median performance of fifth grade students at the seventh month of the academic year. Also reported are the mean raw score, the median raw score, and the percent of correct responses for each academic area. An analysis of these results shows Utah fifth graders

EXHIBIT 19

Utah versus National Results on Comprehensive Tests of Basic Skills Mathematics, Reading, and Science Total Scores, Grade 5



	1975	'78	'81		'78	'81		'75	NORM
Mean Raw Score	63.5	65.0	65.7	61.4	58.3	58.6	51.7	19.7	18.2
Median Raw Score	66.5	67.9	68.2	62.5	61.2	61.9	52.0	–	–
Percent of Correct Responses	65%	66%	67%	63%	69%	69%	61%	55%	51%

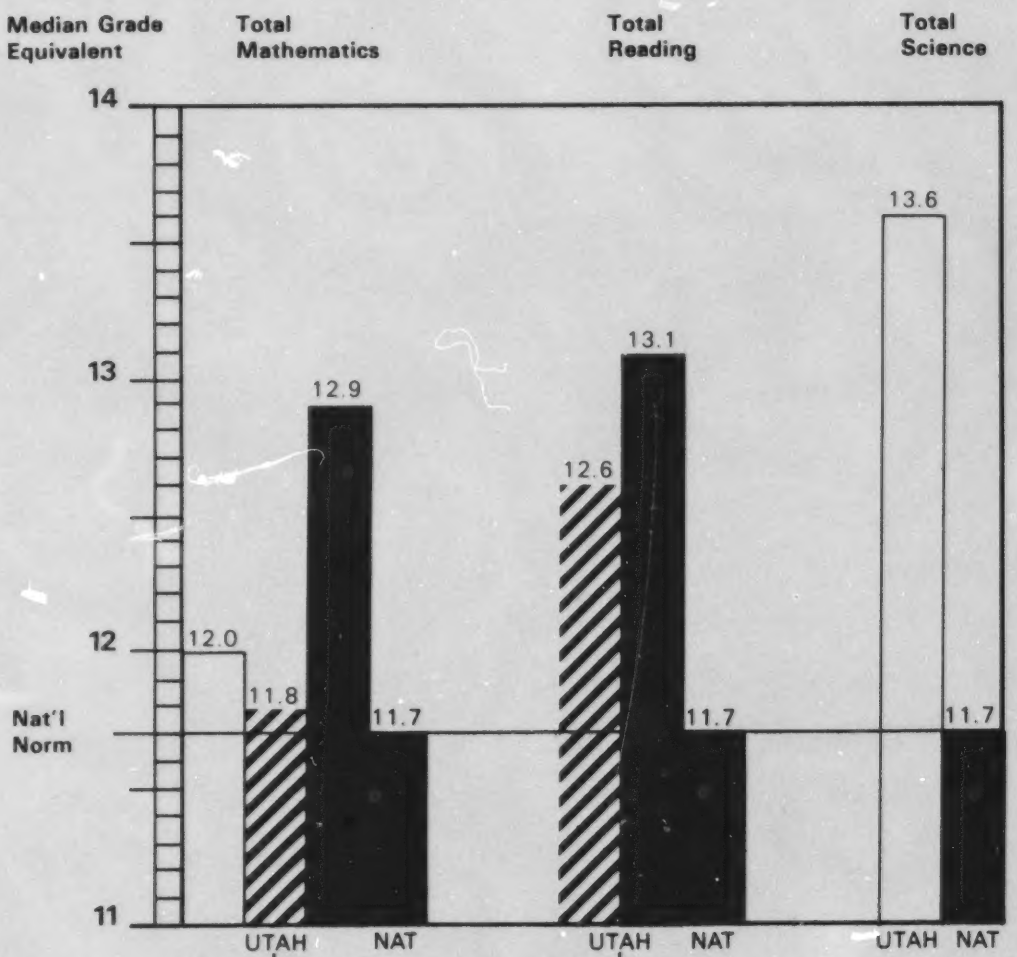
substantially above the national norm group in mathematics, reading, and science. In mathematics, which has been assessed three times, slight growth has been noted in both assessments after the initial 1975 study. Slight growth was also noted in reading for the two assessments accomplished there. Science, which has been assessed only in 1975, shows a rather high level of performance for Utah fifth graders as well. For both reading and science, Utah fifth graders are about one full grade equivalent point superior to the national norm.

Mathematics, Reading, and Science Results for Grade 11 - Exhibit 20. Exhibit 20 presents the results from the administration of the CTBS to Utah eleventh graders, as well as the national norm group performance for mathematics, reading, and science. In mathematics, the Utah CTBS scores actually showed a decline between 1975 and 1978, but a rather dramatic increase in 1981. It is interesting to note that this upswing in mathematics was coincident with the implementation of Utah's 1977 Graduation Requirements which stressed "functional competence" in basic skills areas such as mathematics and reading. In the two assessments of reading, a rather substantial gain was also shown between 1978 and 1981. Science, which was assessed only in 1975, showed marked superiority for the Utah students tested.

An analysis of the percentage of students scoring at various levels in both reading and mathematics for 1978 and 1981, shows that the percentages of students scoring at the test's lowest levels in each of the two years declined rather markedly between 1978 and 1981. This may suggest that the remediation programs linked to functional competency requirements have, in fact, been of considerable assistance to students with serious problems in both mathematics and reading at the secondary level.

EXHIBIT 20

Utah versus National Results on Comprehensive Tests of Basic Skills Mathematics, Reading and Science Total Scores, Grade 11



	1975	'78	'81	NORM	'78	'81	NORM	'75	NORM
Mean Raw Score	68.5	65.2	70.4	64.5	59.3	61.6	55.1	25.9	22.8
Median Raw Score	70.0	67.7	73.2	67.0	62.1	63.9	57.0	–	–
Percent of Correct Responses	70%	67%	72%	66%	70%	72%	65%	65%	57%

Emotional Maturity Results for Grades 5 and 11 - Exhibits 21 and 22. Exhibits 21 and 22 present the results from the emotional maturity goal area for fifth and eleventh grade students respectively. In these Exhibits the percentage of students choosing the two most positive and the two most negative answers to questions in each scale are given for each score area. The percentage of students choosing the middle or neutral response has been eliminated to simplify the presentation. At grade 5, slight increases in self-acceptance have been noted over the three assessment periods while academic self-concept has remained basically stable. Autonomy showed a peak in 1978 with a subsequent decline in 1981.

At grade 11, the pattern was essentially similar for academic self-concept and self-acceptance, however, the autonomy score also showed an increase in 1981. The generally high endorsement of positive alternatives on these scales suggests a rather healthy level of adjustment for Utah students in the area of emotional maturity. At the same time, there were reasonably large numbers of students at both grade levels who did endorse negative alternatives. This fact emphasizes the importance of teachers and the total educational system working to help such students to prevent the further development of maladaptive behaviors and to promote higher levels of emotional maturity.

Peer Relations Results - Exhibit 23. The peer relations scale from the social maturity goal area measures student interpersonal skills, including cooperative skills, and the ability to help others solve problems. Exhibit 23 shows a rather steady pattern of growth on this scale from 1975 through 1981 for both fifth and eleventh graders. In 1981 an average of 45% of the fifth graders and 51% of eleventh graders chose "very good" or "outstanding" in responding to questions measuring peer relations skills.

EXHIBIT 21

Emotional Maturity Results, Grade 5

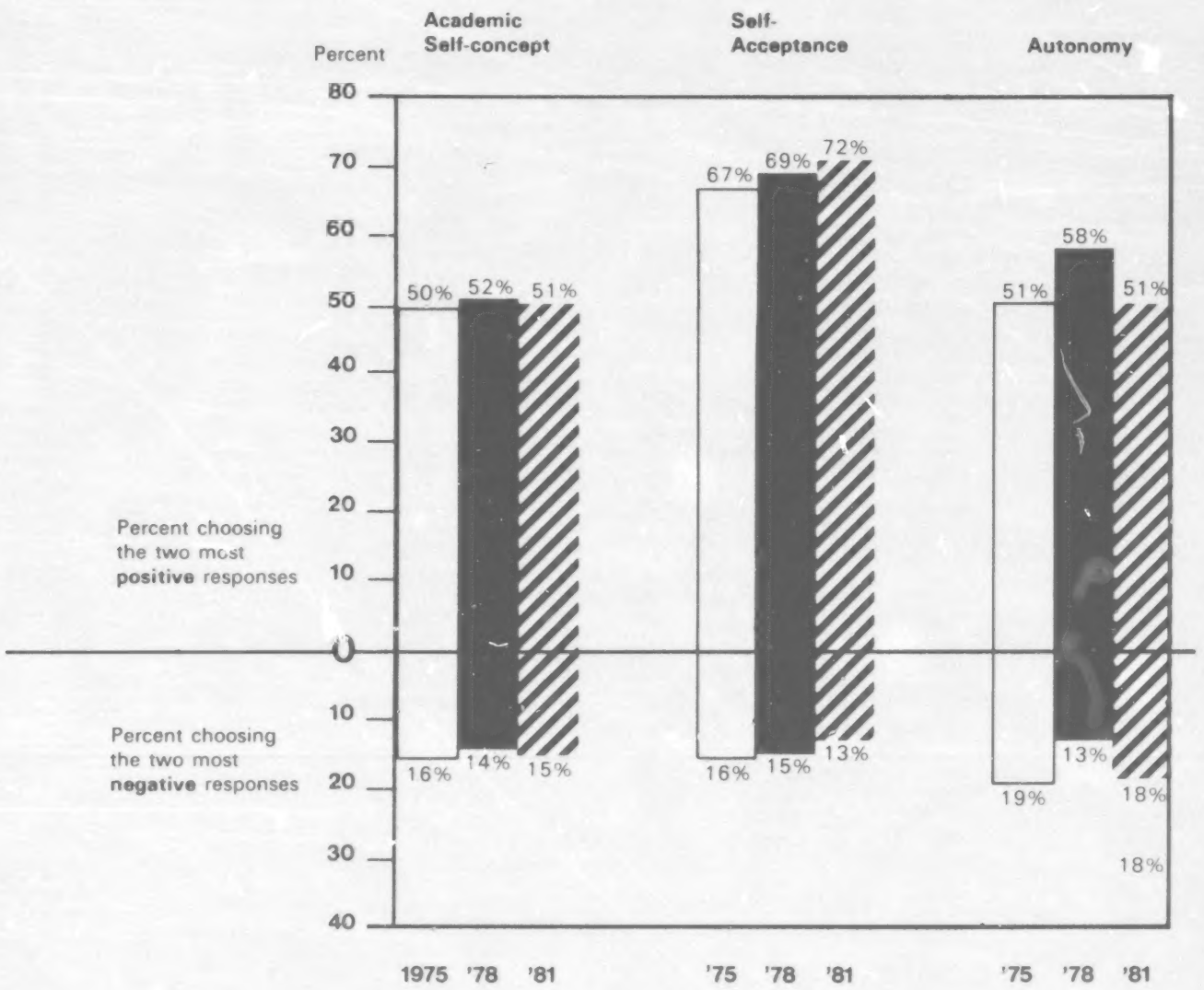


EXHIBIT 22

Emotional Maturity Results, Grade 11

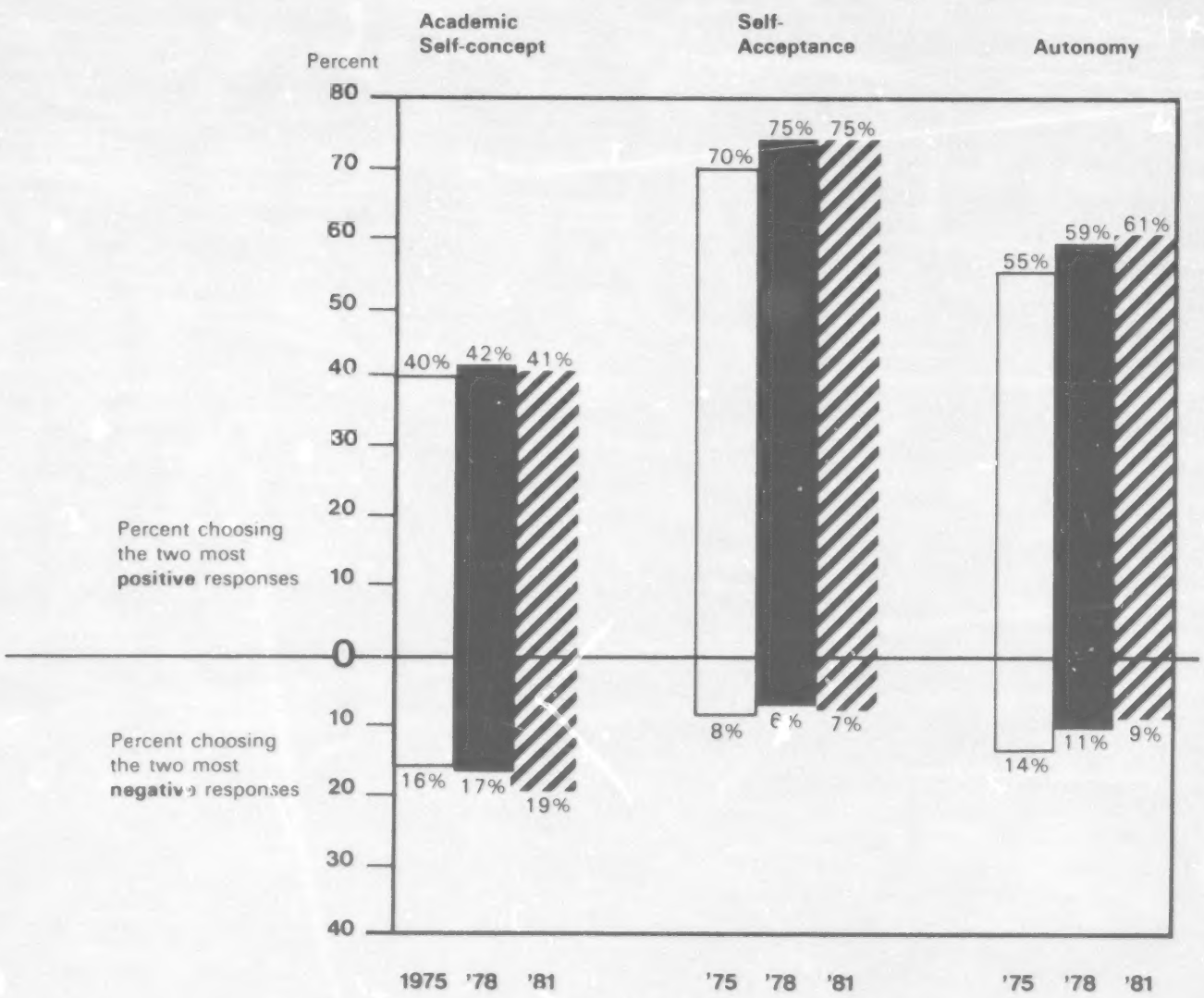
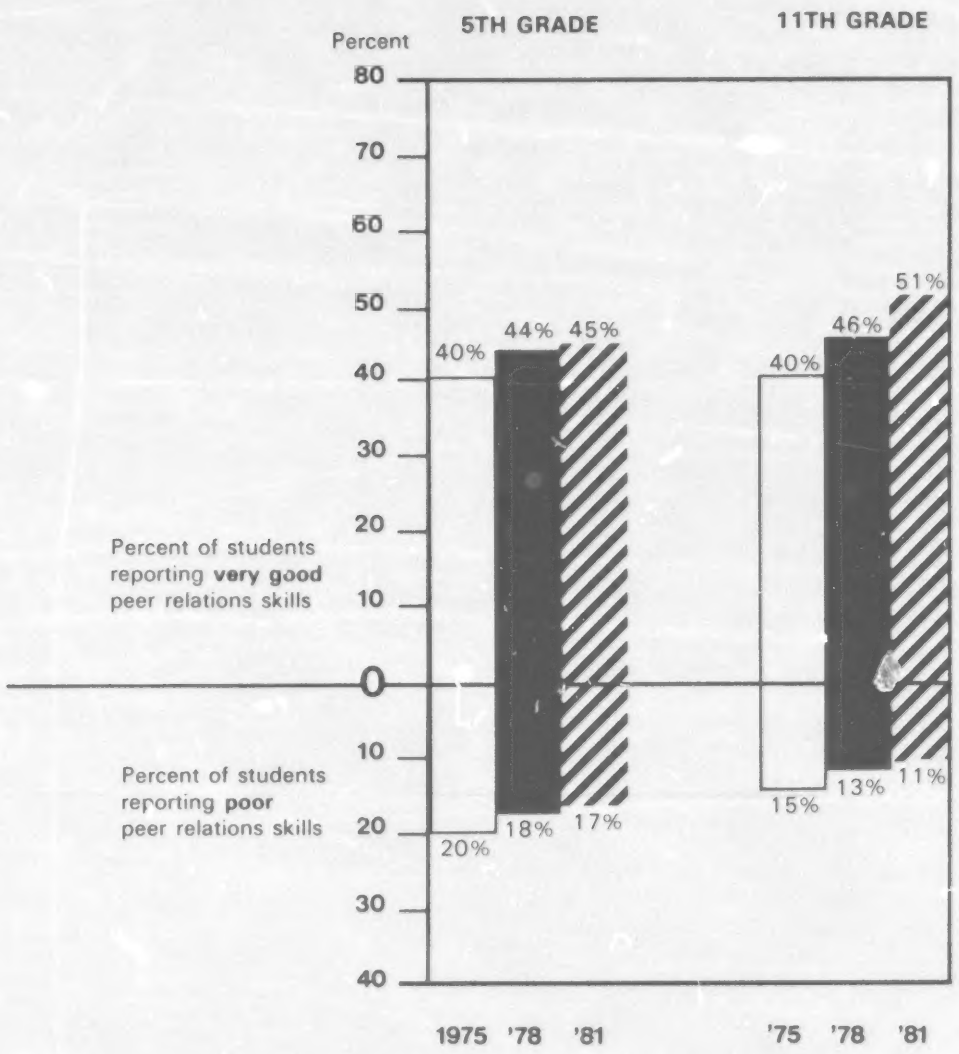


EXHIBIT 23

Results from the Peer Relations Scale, Grades 5 and 11



Both of these percentages were increases over 1978 and 1975. Considering this growth trend over the three assessments and the generally positive findings in how students describe peer relations skills, these results suggest a rather effective level of development for Utah students in this area of social maturity.

Music Achievement Results - Exhibit 24. The music achievement scale is one of the measures included in the aesthetic maturity area in the Statewide Assessment Program. Other measures in this goal area are art achievement, and art and music activities. The music achievement measure consisted of items tapping knowledge of music, music history, and ability to read sheet music. Exhibit 24 shows consistent increases in student performance at both grade 5 and grade 11 for the three assessment periods. The one dramatic increase in test scores in this area was between 1975 and 1978 for fifth grade students. This increase coincided with the introduction and implementation of a statewide elementary music program funded by the Utah State Legislature. The different absolute levels of performance indicate that, as expected, the eleventh grade students scored at a higher level than fifth grade students reflecting their greater experience and intellectual development.

Career Awareness and Exploration Results - Exhibit 25. Results from the career awareness and exploration scale, as displayed in Exhibit 25, show substantial improvement from 1978 through 1981. This may be in part a reflection of the individual student plan provision which was incorporated into the 1977 Graduation Requirements. These results, in conjunction with results from another scale in the productive maturity area (career development experience) where no significant change occurred, indicate that while student awareness has improved as a result of counseling and other

EXHIBIT 24

Results from the Music Achievement Scale, Grades 5 and 11

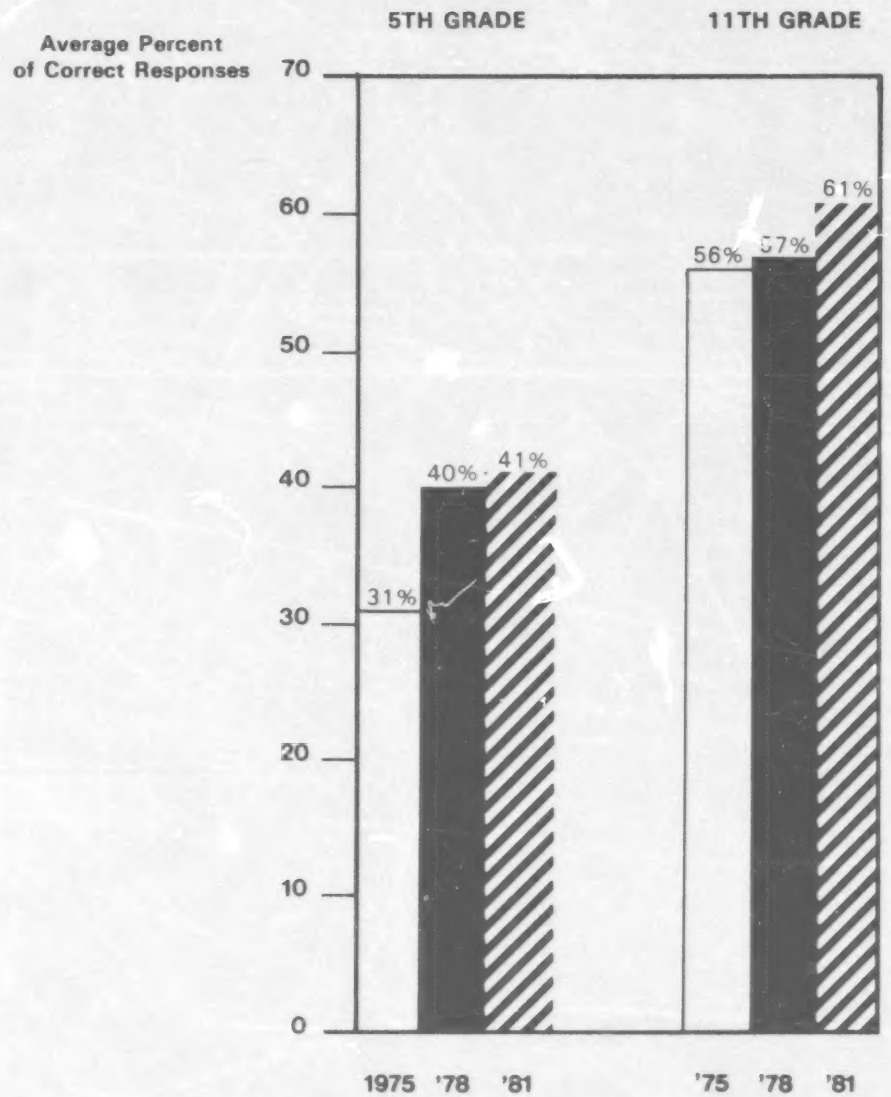
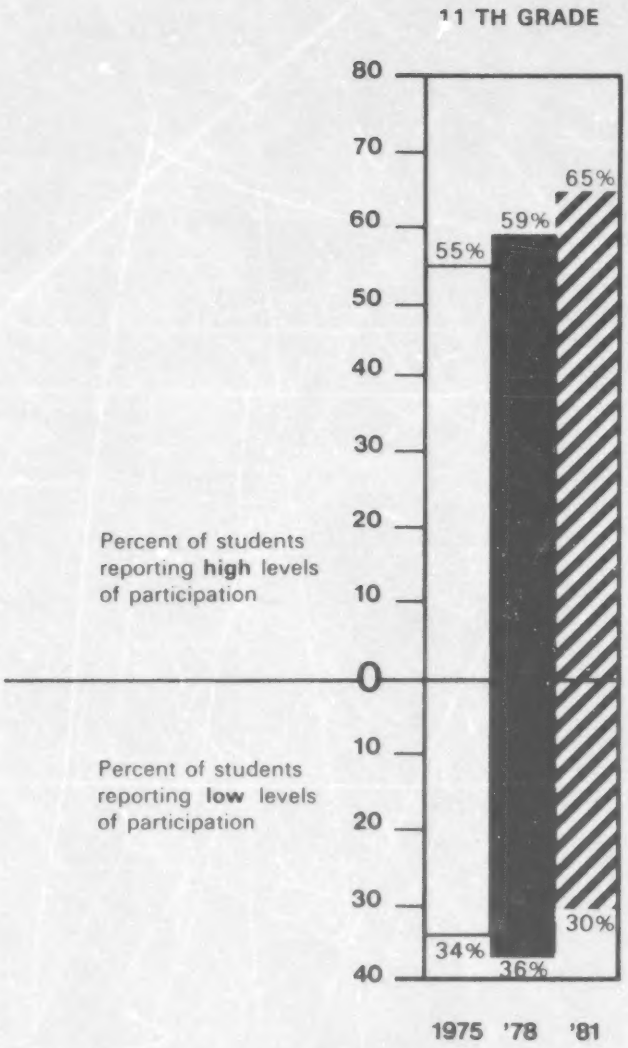


EXHIBIT 25

Results from the Career Awareness and Exploration Scale, Grade 11



activities (such as having a career goal on record in the school), that career education has not made the impact on day-to-day classroom activities which would be desirable.

Enjoyment of School Results - Exhibit 26. Enjoyment of school is an important concern for Utah educators. This measure, which was developed specifically for Statewide Assessment, was based on students' reported overall enjoyment of school. High scores on this scale suggest that students almost always "do a lot of things in school that they enjoy," "often get excited about what is happening in class," and "often study something about which they enjoy learning." Exhibit 26 shows that over half of the Utah fifth and eleventh graders tested reported high levels of enjoyment of school. Eleventh graders were, across all three assessments, somewhat more positive in their feelings about school than were fifth graders. One explanation might be that as students mature, they come to view the educational process in a somewhat more positive fashion. An alternate explanation is that some students, who express dissatisfaction at the fifth grade level, are no longer in the school system at grade 11 because their dislike for school has prompted them to "drop out." The relatively large percentage of students who report low levels of enjoyment of school at grade 5 constitute a legitimate area of concern for educators at the elementary level.

Use of Different Instructional Strategies - Exhibit 27. Still another kind of information collected as part of the Statewide Educational Assessment Program is data from Utah students, at the fifth grade level, which provides a picture of various important classroom instructional strategies. The inclusion of these educational process measures makes the Utah Statewide Assessment measurement package unusually comprehensive in its coverage.

EXHIBIT 26

Results from the Enjoyment of School Scale, Grades 5 and 11

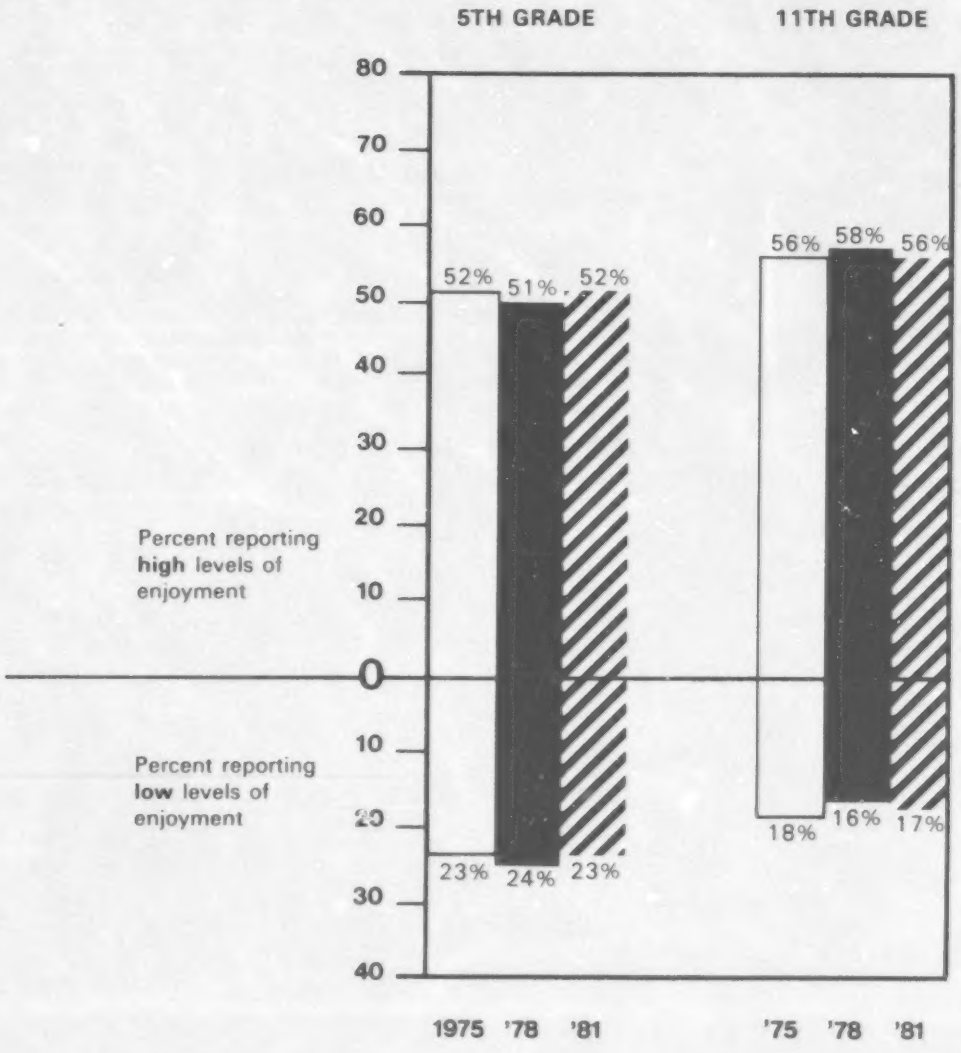


EXHIBIT 27

Frequency of Use of Different Instructional Strategies as Indicated by the Educational Process Measures, Grade 5

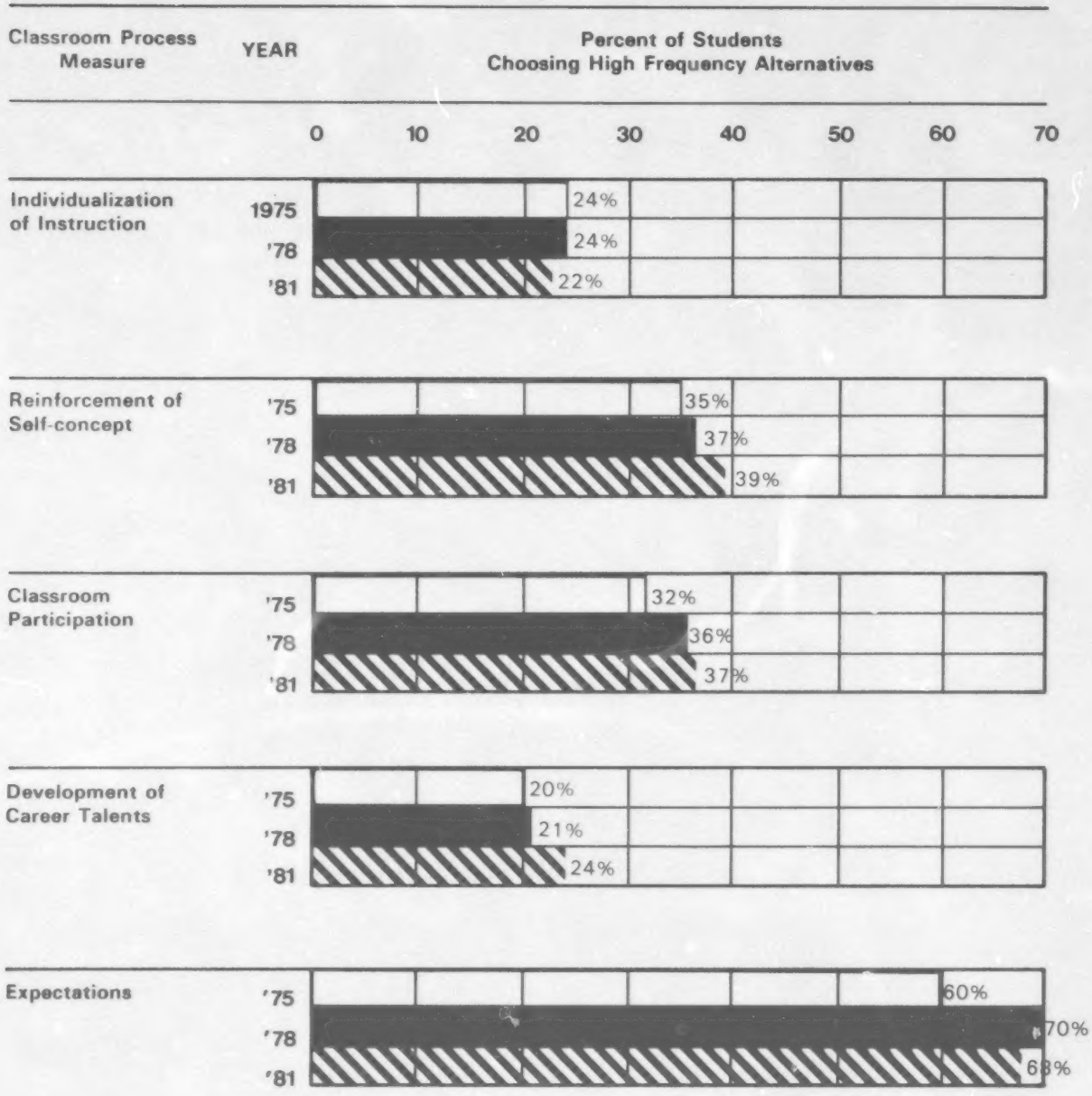


Exhibit 27 presents a profile of information concerning how often these teaching strategies were used at high levels in Utah schools in 1975, 1978, and 1981. The results here show that relatively small percentages of Utah students describe the teaching techniques of individualization of instruction, reinforcement of self-concept, classroom participation, and development of career talents as being "often" or "very often" used in their classrooms. On the other hand, consistent gains in the implementation of these instructional strategies have been shown, over the three assessments, in reinforcement of self-concept, classroom participation, and development of career talents. The individualization measure actually declined slightly in 1981. The expectations scale, which measures how hard students feel they are being asked to work, saw a dramatic increase in 1978 followed by a slight decline in 1981. This measure is apparently much more characteristic of Utah's elementary system than the other process scales included in State Assessment.

Overall Pattern of Results - Exhibits 28 & 29

The Statewide Assessment results highlighted areas which were very strong and areas which could benefit from increased emphasis in the public schools. A comparison of Utah's 1978 and 1981 Statewide Educational Assessments showed different patterns of changes for fifth and eleventh grade students.

Exhibits 28 and 29 illustrate the overall results for the fifth and eleventh grades, respectively, showing the magnitude and direction of changes in scores from 1978 to 1981. In these Exhibits, the 1978 mean score for a measure is always represented as "0", at the center of the charts; a score increase from 1978 to 1981 is shown by a string of plus signs ("+"s) extending to the right of the 0-point, while a decrease is

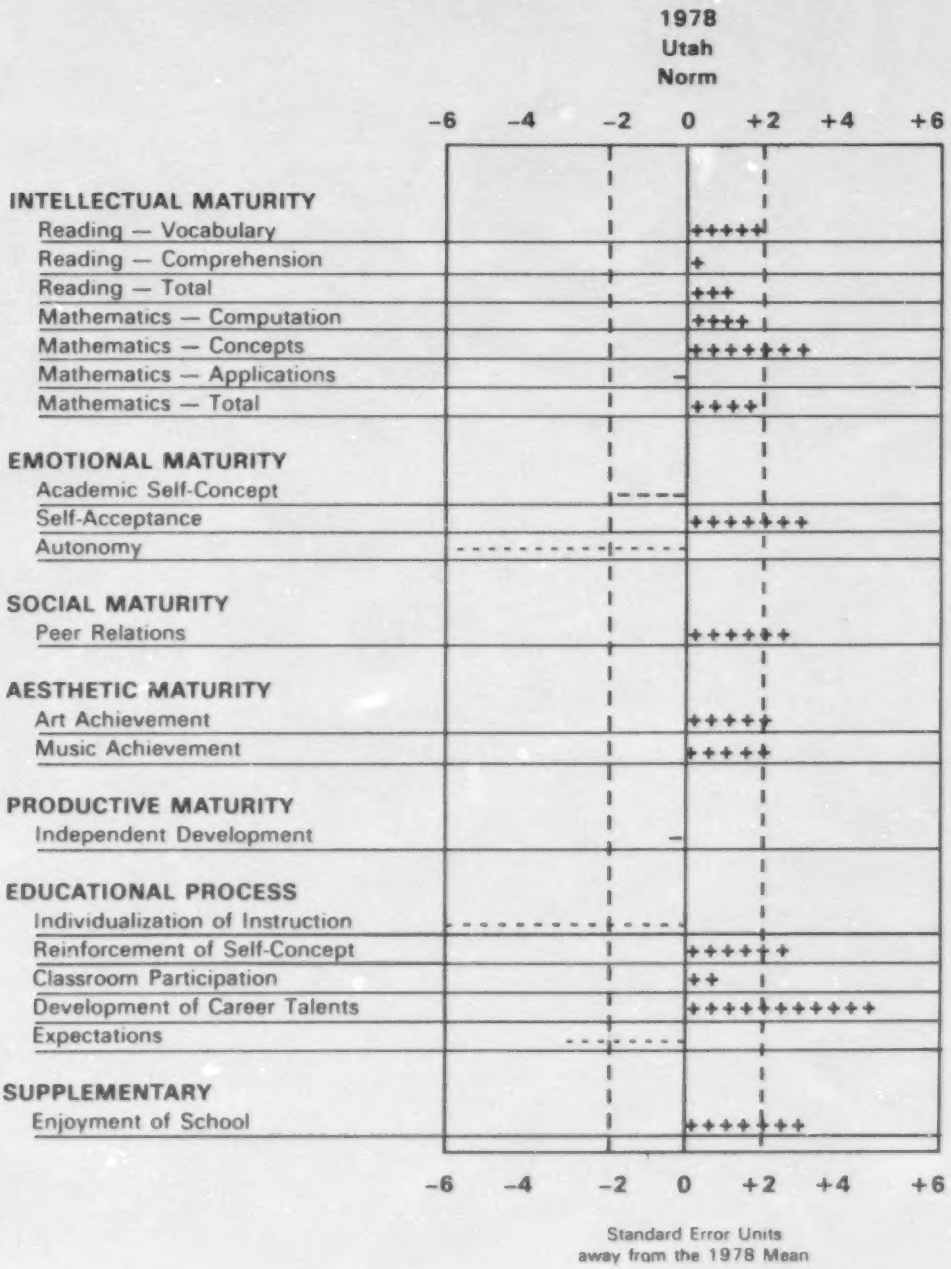
shown by minus signs ("-"s) extending to the left. The magnitude of the change is shown in "standard error" units. This is a statistical scale used to compare the 1978 and 1981 results with the amount of variation expected from chance fluctuation or sampling error. A standard error score greater than "+2" or "-2" represents a statistically significant change between 1978 and 1981. So, for example, Exhibit 28 shows that the fifth grade score for academic self-concept declined by a nonsignificant amount, while self-acceptance increased by a statistically significant amount (beyond what could be expected by chance).

At the fifth grade level, as depicted in Exhibit 28, there were at least slight increases in 14 of the 20 measures which were used in both 1978 and 1981. Increases were most marked in development of career talents, self-acceptance, and mathematics concepts. Areas of concern, marked by clear declines, included individualization of instruction, autonomy, and expectations. Still, increases in approximately 70% of the measures used in five Utah goal areas indicate a broad pattern of continuing progress by Utah elementary schools.

At the eleventh grade level, as depicted in Exhibit 29, the results were even more encouraging. Of the 18 measures used in both 1978 and 1981, no fewer than 15 increased at least slightly, and most of the increases were by statistically significant amounts. The strongest gains were in career awareness and exploration, mathematics computation, and mathematics applications. There were no areas with substantial declines, although there should be some concern about small declines in enjoyment of school, academic self-concept, and self-acceptance.

EXHIBIT 28

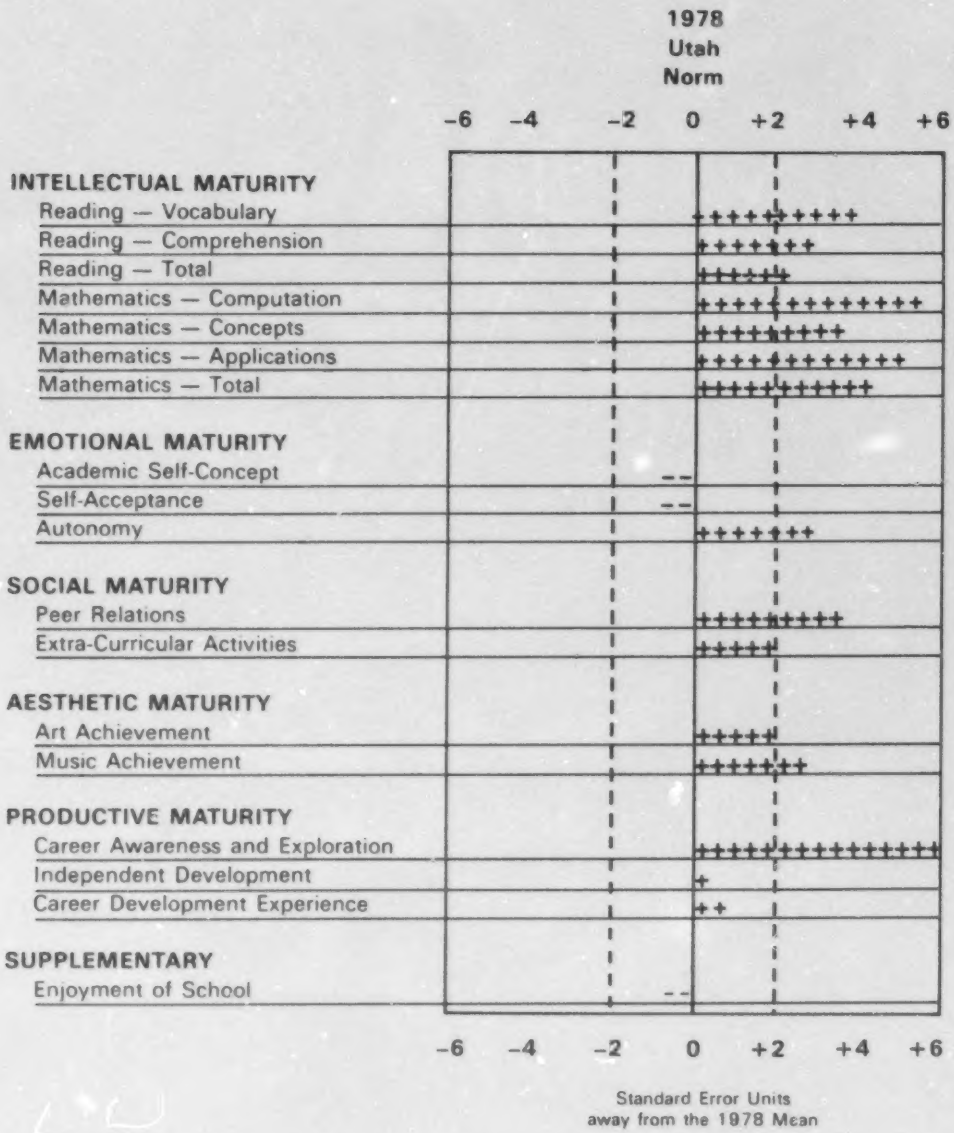
Profile of Changes in Scores, 1978–81, Grade 5



80

EXHIBIT 29

Profile of Changes in Scores, 1978–81, Grade 11



ADULT PERFORMANCE LEVEL (APL) SURVEY RESULTS

As is evidenced by the functional competency requirement in Utah's 1977 Graduation Requirements, there is considerable interest on the part of educators and the public alike over whether or not Utah students are obtaining minimal skills in such key areas as reading and arithmetic computation. A special 1977 study accomplished by the Utah State Office of Education examined the levels of "functional competence" in a random sample of major groups in the general population of the State of Utah. The total sample studied included over 800 Utah citizens whose names were drawn at random from telephone directories across the state. Approximately 80% of the sample received their last formal education in Utah.

Content Measured by the APL - Exhibit 30. The instrument chosen for the study was the Adult Performance Level (APL) Survey developed by the American College Testing Program. Exhibit 30 presents a chart which describes the content measured by the APL. An examination of the APL's ten content and skill areas shows a high relationship between the content of this test and the areas specified in the functional competency requirement section of the 1977 Utah Graduation Requirements. The results from this study provide some indication concerning where Utah adults stand in relationship to a representative set of "functional competencies."

Performance of the Utah Sample in the APL Content and Skill Areas - Exhibit 31. While the APL does not provide a relevant set of norms for the general population nationally, the results of the Utah study may be examined in terms of the absolute performance of the Utah sample in each of the test content areas as they are defined in Exhibit 30. The results presented in Exhibit 31 show the average score and the percentage of items correct for the Utah sample in each of the test's content and skill areas.

EXHIBIT 30

Content and Skill Areas Measured in the APL

SKILL AREAS	CONTENT AREAS				
	COMMUNITY RESOURCES	OCCUPATIONAL KNOWLEDGE	CONSUMER ECONOMICS	HEALTH	GOVERNMENT AND LAW
IDENTIFICATION OF FACTS AND TERMS	Knowing what a time zone is	Knowing what skills are needed for clerical jobs	Know what "bait and switch" is	Knowing what the normal human temperature is	Know what the Bill of Rights says
READING	Reading a bus schedule	Reading a want ad	Reading a contract	Reading a prescription label	Reading a ballot
WRITING	Writing a letter to make hotel reservations	Filling out a W-4 Form	Filing a consumer complaint	Answering a medical questionnaire	Writing a letter to a legislator
COMPUTATION	Computing a plane fare	Computing overtime earnings	Finding the best buy	Computing a daily dosage	Computing a statute of limitations
PROBLEM SOLVING	Determining where to go for help with a problem	Deciding what to say to a bothersome co-worker	Deciding which of two decisions is better in economic terms	Deciding which meal is best, given a set of preconditions	Determining whether a given situation or action is legal

EXHIBIT 31

Levels of Functional Competency of a Random Sample of Major Groups in Utah's General Population as Measured by the APL Survey

SKILL OR CONTENT AREA	NUMBER OF ITEMS IN AREA	AVERAGE SCORE OF UTAH SAMPLE	PERCENTAGE OF ITEMS CORRECT FOR UTAH SAMPLE
CONTENT AREA			
COMMUNITY RESOURCES	8	7.3	91%
OCCUPATIONAL KNOWLEDGE	8	7.2	90%
CONSUMER ECONOMICS	8	6.8	85%
HEALTH	8	7.3	91%
GOVERNMENT & LAW	8	6.4	80%
SKILL AREA			
IDENTIFICATION OF FACTS AND TERMS	6	5.4	90%
READING	9	7.7	86%
WRITING	8	6.8	85%
COMPUTATION	9	7.7	86%
PROBLEM SOLVING	8	7.4	93%

Clearly, for the items included in the APL, the Utah adult sample may be considered "competent" in the areas examined. In no case was the percentage correct lower than 80% in any of the score areas. In several instances, (community resources, occupational knowledge, health, identification of facts and terms, and problem solving) performance was 90% or better. These results indicate that a great majority of the Utah adult population can deal effectively with the minimal kinds of tasks which are tested by the APL. Certainly the APL does not test everything which might be considered in arriving at judgments about "functional competence." The APL does, however, measure skills which are important for people to function at a minimal level in society.

Sample APL Item Results - Exhibit 32. Exhibit 32 presents a sample of the performance of the Utah group in a selection of individual items. The Exhibit contains a statement of the results of several items along with an indication of the content and skill tested by the item. This Exhibit shows that the Utah citizens tested did very well on such tasks as map reading, determining the appropriate amount of life insurance to buy based on a given income, and computing an employment agency fee. The Utah sample did not perform as well on items such as identifying the correct phrasing for a letter to a congressman and interpreting an inter-city bus schedule.

Other Conclusions from the APL Study. In addition to the performance results which have been outlined above, the Utah APL Study examined the impact of several key demographic and biographical considerations on test performance. Among the more important findings were the following:

- Place of residence (rural or urban) had little effect on adult functional competency as measured by the APL.
- Males and females in the Utah sample scored at approximately the same levels.

EXHIBIT 32

Sample APL Items Results for Utah Sample

- 75% of the Utah group tested correctly interpreted an inter-city bus schedule. (Community Resources/Reading)*

- 95% of the Utahns tested correctly identified the appropriate junction on a road map in order to travel by the shortest route. (Community Resources/Reading)

- 90% of the Utah group correctly computed the amount of an employment agency fee and the number of months required to pay it at a specified rate per month. (Occupational Knowledge/Computation)

- The definition of an "open shop" was correctly identified by 84% of the Utah group. (Occupational Knowledge/Identification of Facts and Terms)

- 97% of the group tested could determine the appropriate amount of life insurance to buy based on a given annual income. (Consumer Economics/Reading)

- 86% of the Utah group correctly identified the sales tactic known as "bait and switch." (Consumer Economics/Problem Solving)

- 86% of the group tested correctly interpreted the label on a bottle of prescription medication. (Health/Computation)

- 71% of the sample correctly identified the appropriate phrasing for a letter to a congressman. (Government and Law/Writing)

*The information in parentheses indicates the content and skill tested by the item.

- Adults educated in Utah scored at about the same level as adults educated elsewhere. Adults with more formal education scored considerably higher on almost every area of the APL.

- Utah adults working in the technical, managerial, and professional occupational areas scored higher than the state average on all tests; while adults in labor, service, and farm areas tended to score lower than the state average. Sales and clerical workers scored at about the state average.

- Higher family income was associated with higher test performance.

- Utah adults over 65 scored lower on the test than younger adults.

ADVANCED PLACEMENT PROGRAM RESULTS

The Advanced Placement Program, sponsored by the College Entrance Examination Board, is designed to assist high schools across the nation in meeting the needs of academically gifted students. Advanced Placement (AP) accomplishes this by providing three basic services: First, AP assists high schools in developing college-level courses for the most academically talented students. Second, a national program of testing, scoring, and reporting is provided in the academic areas for which AP provides curriculum direction. Finally, test results are furnished to colleges specified by students and provide one basis for granting students college credit for superior high school achievement.

Participation of Utah students and high schools in the AP program has been very high, comparatively, since Utah became affiliated with the program in 1962. On the basis of examinations taken-per-capita, Utah is consistently the state ranked first in the AP program. Thus, a much higher percentage of Utah students take AP exams than in any other state in the nation. In 1981, nearly 3,200 AP exams were taken by 2,363 Utah students in 52 high schools.

Advanced Placement Scoring System.

Scoring the AP exams has remained much the same since the program's introduction into the state. Each exam is graded and assigned one of the following scores:

5 - Extremely well qualified
4 - Well qualified
3 - Qualified
2 - Possibly qualified
1 - No recommendation

College credit is granted by all institutions of higher learning in the state for scores of 3 or above. Some colleges also award credit for a score of 2.

Advanced Placement Results in Five Subject Areas: 1966 - 1982.

Exhibits 33 through 37 present comparisons between Utah and national Advanced Placement results for the American history, biology, chemistry, English, and mathematics tests for the period from 1966 through 1982. Each exhibit portrays the results for students who elected to take the test in a particular subject area. For each of the years presented, the total number of students taking the subject area test is presented, as is the average (mean) grade obtained by that group of students and the percentage of students who received a "qualified" grade of 3 or higher.

American History - Exhibit 33. The performance of Utah students on the Advanced Placement history test over the 17-year period described in Exhibit 33, has rather consistently improved from lows in the mid-60's to a high realized in 1982. The Utah averages remain somewhat lower than those of the national group of AP test-takers in American history, although the national figures do not demonstrate the same upward trend. The number of students taking the AP history test has risen dramatically from a low of 132 in 1967, to a high of 830 for 1982.

Biology - Exhibit 34. Both state and national averages on the AP biology test have risen gradually from the mid-60's through the present time. State and national means are roughly equivalent in the biology area with a slight advantage for the national group in any given year. The biology test is taken by far fewer students than such areas as English or American history, however, the 1982 period evidenced the largest number of test-takers for biology in the 17-year span depicted. The 1977 results showed the highest level of performance for both state and national test-takers in AP biology with 81% of the Utah students qualifying that year, as compared to 80% of the national group.

EXHIBIT 33

Utah and National Advanced Placement Results in American History, 1966–82

	UTAH			NATIONAL		
Year	Total Students	Mean Grade	Percent[a] Qualified	Total Students	Mean Grade	Percent[a] Qualified
1966	158	2.1	48%	8,873	2.8	64%
1967	132	2.5	44%	8,935	2.9	65%
1968	189	2.6	50%	10,608	3.0	69%
1969	284	2.4	42%	11,837	3.0	69%
1970	342	2.5	41%	12,056	3.0	65%
1971	—	—	[b]	12,591	3.0	69%
1972	449	2.5	40%	12,964	3.0	61%
1973	407	2.6	45%	12,720	3.0	64%
1974	435	2.6	49%	14,331	3.0	65%
1975	482	2.7	54%	16,068	3.1	67%
1976	476	2.8	60%	18,718	3.1	68%
1977	482	2.9	58%	21,325	3.1	68%
1978	490	2.8	55%	24,444	3.2	70%
1979	655	2.7	51%	28,222	3.1	67%
1980	670	2.7	53%	32,098	3.1	67%
1981	755	2.7	51%	35,999	3.1	66%
1982	830	2.9	58%	38,286	3.1	66%

[a]Percent of total students who qualified with a grade of three (3) or higher.

[b]1971 results for Utah were not available

EXHIBIT 34

Utah and National Advanced Placement Results in Biology, 1966–82

	UTAH			NATIONAL		
Year	Total Students	Mean Grade	Percent[a] Qualified	Total Students	Mean Grade	Percent[a] Qualified
1966	62	2.2	37%	3,031	2.7	53%
1967	67	2.3	35%	3,324	2.6	51%
1968	46	2.1	32%	3,891	2.7	57%
1969	97	2.2	33%	4,449	2.8	60%
1970	84	2.4	42%	4,490	2.9	67%
1971	—	—	[b]	5,158	3.0	65%
1972	85	2.9	71%	5,967	3.0	68%
1973	97	2.9	70%	5,764	3.2	78%
1974	78	2.9	71%	7,411	3.1	74%
1975	113	2.8	66%	8,206	3.3	77%
1976	130	2.9	71%	9,482	3.3	79%
1977	103	3.3	81%	10,530	3.4	80%
1978	97	3.1	63%	11,342	3.4	80%
1979	130	2.9	64%	12,835	3.3	78%
1980	170	2.9	65%	13,549	3.3	77%
1981	177	3.1	69%	15,199	3.4	77%
1982	219	3.1	68%	15,947	3.2	76%

[a]Percent of total students who qualified with a grade of three (3) or higher.

[b]1971 results for Utah were not available

Chemistry - Exhibit 35. The number of students both within the state and nationally taking the chemistry test has grown rather dramatically from 1966 through the present. However, this test still remains far less popular than other core curriculum AP areas. The performance of Utah students on the AP chemistry test has been remarkably consistent for the entire 17-year period and is very much like the national profile. The high point for Utah performance was reached in 1974 with 77% of the in-state test-takers achieving a grade of 3 or higher. In the most recent test-taking period, 1982, 57% of the Utah group obtained a score of 3 or higher compared to 68% of the national group.

English - Exhibit 36. The same gradual upward trend noted for American history within the state is displayed for the AP English test results. From a low of 37% of the Utah students qualifying at a mean grade of 2.3, Utah AP English scores have risen gradually from 1966 through 1982 in much the same fashion as AP American history. While the national average has remained relatively stable from 1968 through 1982, the Utah figures have risen by half a grade from 1966 to the present. Roughly, twice as many Utah students are taking the AP English test as was true in 1966 with 63% of the Utah group scoring 3 or higher in 1982 compared to a national figure of 69%.

Mathematics - Exhibit 37. The popularity of the Advanced Placement mathematics test has risen tremendously over the 17-year period depicted in Exhibit 37. In the most recent test taking year, 422 Utah students took the Advanced Placement mathematics test, compared to 92 students in 1966. Since 1973, the Utah students taking the mathematics test have demonstrated somewhat higher scores than the national group of students on AP mathematics. For 1982, 74% of the Utah students taking the test qualifiec

EXHIBIT 35

Utah and National Advanced Placement Results in Chemistry, 1966–82

	UTAH			NATIONAL		
Year	Total Students	Mean Grade	Percent[a] Qualified	Total Students	Mean Grade	Percent[a] Qualified
1966	50	2.9	78%	3,516	3.1	78%
1967	56	2.8	64%	3,824	2.9	67%
1968	61	2.8	70%	3,874	2.9	76%
1969	76	2.8	69%	4,205	2.8	70%
1970	90	2.7	68%	4,005	2.9	71%
1971	—	—	[b]	3,996	3.0	76%
1972	99	2.8	61%	3,741	3.0	67%
1973	85	2.8	61%	3,447	3.0	68%
1974	112	3.0	77%	3,802	3.0	70%
1975	89	2.8	64%	4,181	3.1	70%
1976	134	2.9	59%	5,341	3.1	71%
1977	115	2.9	63%	5,559	3.1	71%
1978	119	3.0	72%	6,270	3.1	70%
1979	153	2.6	63%	7,016	3.1	69%
1980	193	2.9	61%	8,209	3.1	69%
1981	191	2.9	67%	8,877	3.0	69%
1982	164	2.7	57%	9,476	3.0	68%

[a]Percent of total students who qualified with a grade of three (3) or higher.

[b]1971 results for Utah were not available.

EXHIBIT 36

Utah and National Advanced Placement Results in English, 1966–82

	UTAH			NATIONAL		
Year	Total Students	Mean Grade	Percent[a] Qualified	Total Students	Mean Grade	Percent[a] Qualified
1966	446	2.3	37%	16,266	2.9	63%
1967	522	2.6	52%	18,383	2.9	61%
1968	585	2.8	62%	20,531	3.1	71%
1969	796	2.7	60%	23,691	3.1	74%
1970	924	2.7	62%	25,220	3.1	74%
1971	—	—	[b]	25,255	3.1	75%
1972	840	2.8	66%	24,807	3.1	77%
1973	832	2.7	60%	22,422	3.1	74%
1974	913	2.7	56%	24,131	3.1	70%
1975	797	2.7	60%	25,656	3.1	72%
1976	911	2.8	59%	29,503	3.1	71%
1977	937	2.9	66%	32,142	3.1	72%
1978	1,090	2.9	67%	36,334	3.1	73%
1979	1,153	2.9	61%	41,975	3.1	70%
1980	1,081	2.9	67%	45,082	3.1	70%
1981	1,162	2.9	65%	48,605	3.1	70%
1982	1,085	2.9	63%	51,128	3.1	69%

[a]Percent of total students who qualified with a grade of three (3) or higher

[b]1971 results for Utah were not available

EXHIBIT 37

Utah and National Advanced Placement Results in Mathematics, 1966–82

	UTAH			NATIONAL		
Year	Total Students	Mean Grade	Percent[a] Qualified	Total Students	Mean Grade	Percent[a] Qualified
1966	92	1.9	24%	9,630	2.6	49%
1967	101	2.4	39%	10,675	2.5	46%
1968	150	2.2	37%	11,623	2.6	51%
1969	139	2.5	50%	10,280	2.7	53%
1970	143	2.5	44%	10,273	2.7	52%
1971	—	—	[b]	10,468	2.8	53%
1972	200	2.7	57%	10,611	2.8	59%
1973	207	2.9	59%	9,871	2.9	59%
1974	274	2.8	62%	11,213	2.8	60%
1975	277	3.1	72%	11,804	3.0	66%
1976	254	3.2	75%	13,076	3.0	67%
1977	331	3.2	71%	14,089	3.0	65%
1978	317	3.1	71%	15,774	3.0	67%
1979	348	3.3	76%	17,615	3.0	68%
1980	361	3.1	73%	20,096	3.0	69%
1981	463	3.1	72%	22,537	3.1	70%
1982	422	3.2	74%	23,825	3.1	70%

[a]Percent of total students who qualified with a grade of three (3) or higher.

[b]1971 results for Utah were not available.

compared to 70% for the national group. The upward trend for the Utah students is impressive indeed, starting from a mean grade of 1.9 and 24% qualifying in 1966, to the present average grade of 3.2 and 74% qualifying.

Overview of Utah Advanced Placement Program and Student Performance.

The most remarkable aspect of the Advanced Placement picture in the state of Utah is the access to the program and actual participation by Utah students in Advanced Placement. Utah has a higher per-capita participation rate than any other state in the nation in Advanced Placement. This means it is likely that many more Utah students with lower academic ability participate in the AP program than would be the case in other states. In spite of this fact, the Utah average scores in the five most popular AP tests have not been markedly lower than the national averages for the 17-year period from 1966 through 1982. In fact, in the face of this very high participation rate, recent results in every area of the test show state averages very close to the national averages. In mathematics, the scores of the Utah students actually exceed those of the national group over an extended period of time in spite of an astonishingly high participation rate by the Utah students.

Looking only at absolute numbers, Utah had more students participating in AP than states with four to five times Utah's population. This high degree of access to programs for the academically gifted, as well as a high actual participation rate, constitutes a highly significant element of the state's total secondary program. Recently, the AP figures would indicate that over a tenth of the students entering Utah's colleges have already, through the AP program, earned exam-based college credit.

ADULT EDUCATIONAL ATTAINMENT IN UTAH

The United States Census of 1970 and 1980, as well as the 1976 Survey of Income and Education accomplished by the Bureau of the Census, provide some indicators of educational attainment for Utah and the nation. Exhibit 38 shows a comparison of the findings of the 1970 Census, the 1976 Survey of Income and Education, and the 1980 Census. In both 1970 and 1976, Utah was first among the fifty states in the percentage of its population over 25 with a high school diploma. In 1980, Utah was second-ranked among all fifty states, being surpassed only by Alaska. The percentage of adults holding a high school diploma within the state has risen steadily over the decade with 67.3% holding at least a high school diploma in 1970, while 80% held at least the high school diploma by 1980.

Exhibit 38 also shows the median years of education for 1970 and 1976 for both Utah and the nation. Median years of education were not available, as of the date of this report, from the 1980 census. This analysis shows Utah ranked first among the fifty states in both 1970 and 1976. The median years of education for Utah adults increased from 12.5 to 12.8 during this period, while the national median increased from 12.2 to 12.5. These census-based indicators continue to demonstrate that the state provides a very large percentage of its students with the opportunity to complete secondary education and pursue post-secondary education.

EXHIBIT 38

UTAH VERSUS NATIONAL ADULT EDUCATIONAL ATTAINMENT FOR 1970, 1976, AND 1980

A. Percentage of population over 25 with a high school diploma.[a]

1970			1976			1980		
Utah Percentage	Utah's Rank in Nation	National Percentage	Utah Percentage	Utah's Rank in Nation	National Percentage	Utah Percentage	Utah's Rank in Nation	National Percentage
67.3%	1st	52.3%	78.9%	1st	63.8%	80.0%	2nd	66.3%

B. Median years of education [b]

1970			1976		
Utah Median Years	Utah's Rank in Nation	National Median Years	Utah Median Years	Utah's Rank in Nation	National Median Years
12.5	1st	12.2	12.8	1st	12.5

[a]Includes all those who are high school graduates, as well as those who are college graduates or have some college.
[b]1980 median figures unavailable as of publication date for this report.

SOURCES: 1970 United States Census
1976 Survey of Income and Education
1980 United States Census

UTAH ACCREDITATION ACTIVITIES

High schools in Utah are accredited by the Northwest Association of Schools and Colleges. This is one of six regional accrediting associations in the United States and includes the states of Utah, Nevada, Idaho, Montana, Oregon, Washington, and Alaska. The Association was formed April 5, 1917, with a membership of 25 secondary schools and 8 institutions of higher learning. At the conclusion of the annual convention in December, 1982, the membership was 935 schools, 145 colleges, and 15 candidates for admission.

The accreditation program is voluntary for schools and has been since the Association was formed. Utah high schools have been affiliated with the Northwest Association since shortly after it was established. The record for the longest continuous membership in Utah is currently shared by four high schools -- Granite, East, West, and Tooele. All received their first accreditation in 1926.

Utah had 117 schools accredited by the Schools Commission of the Northwest Association of Schools and Colleges during the past year. This included 91 of the 95 public high schools in the state, 4 non-public schools, 1 federal school, 11 special purpose schools (educational programs only), 3 intermediate schools, and 7 elementary schools.

Accreditation standards for high schools include two kinds of provisions:

1. minimum requirements which have been substantiated by research, experiences, or the judgment of education as basic requirements for a satisfactory program of secondary education.

2. Recommendations which represent desirable goals for all schools.

The present ten Standards of the Association for high schools follow:

I. The Educational Program
II. Pupil Personnel Services
III. School Plant and Equipment
IV. Instructional Media
V. Records
VI. Quality and Improvement of Educational Programs
VII. Preparation of Professional Personnel
VIII. Administration
IX. Teacher Load
X. Student Activities

Within each standard there are, of course, a number of subsections dealing with that area. Many of these items are not included in this report. In addition to the specific standards used, there are items dealing with the dynamic nature of the school program including use of innovative programs, establishment of school goals, and indices of effectiveness.

Standards of the Northwest Association for all categories of accreditation are reviewed every other year and the necessary changes made.

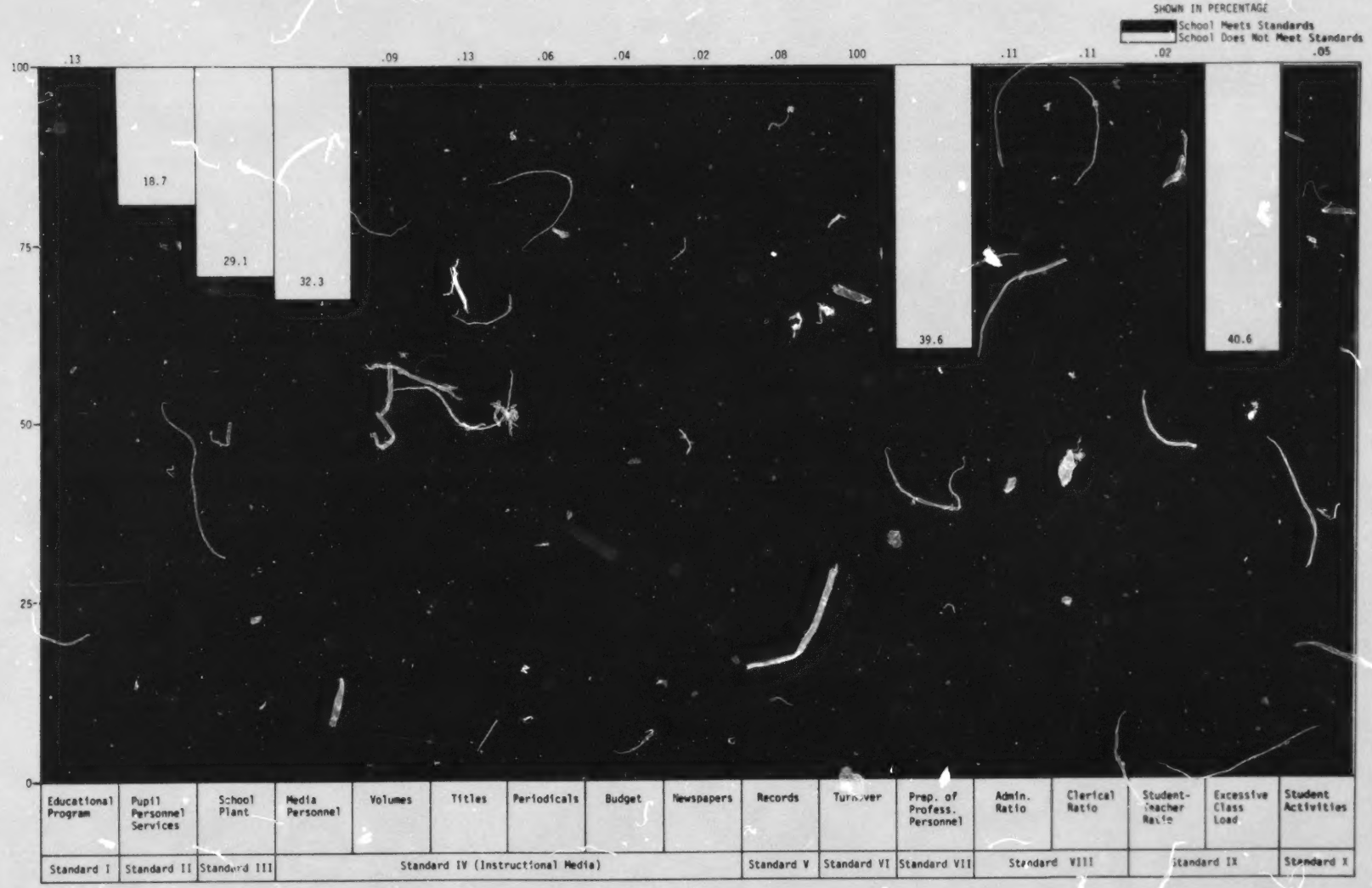
Exhibit 39 gives an overall picture of how well Utah high schools are meeting certain areas covered by the ten standards of the program. This information deals with the 1982-83 school year.

The following comments which expand on the information depicted in Exhibit 39 relate to the 91 public high schools, 4 non-public high schools, and 1 federal school accredited by the Northwest Association.

Under Standard I, The Educational Program, Utah schools, without exception, exceed the overall requirements. In fact the main area that shows a deviation in the schools is foreign language. Eleven schools do not have a foreign language offering this year or a sufficient number of foreign language offerings this year to meet the standards. Some smaller schools are unable to offer a foreign language every year because of the uncertainty of a teacher with appropriate qualifications and the needed number of students interested in studying a language. One school does not

EXHIBIT 39

Percentage of Utah High Schools Meeting the Accreditation Standards, 1982-83



meet the requirement in the fine arts area. All schools have a written statement of philosophy and objectives.

Under Standard II, Pupil Personnel Services, the present standard calls for a student-counselor ratio of not more than 400 to 1. While 78 schools meet this standard, 18 of the schools do not.

Standard III, School Plant, shows 68 schools reporting that their school plants are adequate at present to meet the needs of the students and 28 show some deviations in the plant adequacies. These are generally in the areas of physical education, vocational education, art, and music. The greatest improvement, since the last report in 1979, is shown in this area.

Most schools meet the requirements under Standard IV, Instructional Media, that have to do with the number of volumes, periodicals, and newspapers available, as well as the required budget for print and non-print materials used by students as part of the media program. Thirty-one of the 96 schools show a need for additional assistance in the media center. Utilization of the media center and the resources by students and staff is very good in most schools.

The reports show school records are generally well kept and safeguarded against loss and damage under Standard V, Records. Eight of the 96 schools do not have the records safeguarded against fire.

Under Standard VI, Quality and Improvement of the Education Program, schools indicate changes in programs, new programs added, and programs that have been eliminated. Particular priorities and areas of special emphasis for the year are also shown. Almost every school indicates a strong emphasis is being given in computer programs.

One indicator of the quality of the overall program has to do with the stability of the professional staff. No school shows an excessive teacher turnover.

Teachers are meeting the preparation standards for all areas of their assignments in 58 of the 96 schools. Some teachers indicate that they need additional preparation time in some area of their assignments in the other 38 schools. This usually consists of one or two class periods for the teachers involved. This is shown under Standard VII.

Standard VIII, Administration, requires adequate numbers of administrative and clerical personnel within each school. Standards in both areas are generally met. Eighty-five schools meet this Standard in both areas.

Only 2 of the 96 schools being considered exceed the overall student-teacher ratio of 25 to 1. One of these is 26 to 1 and the other is 27 to 1. The lowest student-teacher ration reported is 7 to 1.

Teachers with excessive class loads, according to the standard, are found in 39 of the schools. The numbers vary, of course, from school to school. Student-teacher ratios and class load requirements are found in Standard IX, Teacher Load.

Standard X, Student Activities, is being met in almost every school. Five of the schools indicate that the person responsible for funds is not bonded.

High schools in Utah are doing a good job of meeting standards of the accreditation program. Much overall improvement is noted each year and considerable growth has been made during the past few years in areas such as media programs, teacher preparation, teacher loads, and pupil personnel services.

Junior high schools, middle schools, intermediate schools, and elementary schools are accredited on a voluntary basis by either the Utah State Board of Education or the Northwest Association of Schools and Colleges. Standards are similar to those of the high school program, but they have been developed especially for each specific level.

Forty-three junior high schools, middle schools, and intermediate schools are accredited by the State Board of Education and three intermediate schools are accredited by both the State Board and the Northwest Association of Schools and Colleges. Standards are generally being met. Standards needing the greatest emphasis are those dealing with teacher load, teacher preparation, and pupil personnel services needing the greatest emphasis.

At the present time, the Utah State Board of Education has accredited 59 elementary schools. This is an increase of 31 schools since the last report. Seven of the 59 schools were also accredited by the Northwest Association of Schools and Colleges in December 1982. This was the first year that elementary schools were accredited by the Northwest Association. Standards of the Elementary Accreditation program are being met in most instances. Class load is the area most often shown as a deviation from the standards.

Eleven Special Purpose Schools (educational programs) in Utah are accredited by the Northwest Association of Schools and Colleges. These schools are designed to meet the special needs of a particular group of students under special circumstances. Basic standards are used to measure the effectiveness of these Special Purpose Schools.

Accreditation is serving its major purpose of school improvement by serving as a catalyst for improvement and generally upgrading the quality of institutions and their programs of study. Accredited schools are meeting standards considered essential for quality education.

THE NATIONAL AND INTERNATIONAL PICTURE: NATIONAL ASSESSMENT AND INTERNATIONAL EVALUATION STUDY FINDINGS

The National Assessment of Educational Progress (NAEP)

The National Assessment of Educational Progress (NAEP) has, since 1969, gathered educational achievement information describing the performance of students across the nation who were ages 9, 13, and 17, as well as young adults. Assessment has taken place in 10 areas including art, career and occupational development, citizenship, literature, mathematics, music, reading, science, social studies, and writing. This effort, which produces a truly representative national profile of achievement in key areas, is unique in the history of educational testing in this country or any other. The results produced provide an extremely helpful picture of national trends in key achievement areas. The following sections present an overview of important results from NAEP assessments.

National Performance Trends

Reading. NAEP has assessed reading three times during the past decade (1971, 1975, and 1980). Over the decade, nine-year-olds have shown consistent growth in literal comprehension, inferential comprehension, and reference skills. The pattern for 13-year-olds has been one of slight growth in literal comprehension and reference skills but a decline in inferential comprehension. For 17-year-olds, declines have been noted in literal comprehension and inferential comprehension, with a slight increase in reference skills. Barrow, Mullis, and Phillips summarize reading performance as measured by NAEP with the following observation:

> Although young readers in America appear to have the basics well in hand, there is growing concern on the part of educators and researchers because our students are declining in their performance on tasks that involve higher order skills. Mixed

> results were obtained in the most recent reading/literature assessment; on the positive side, overall reading performance is stable or improving for the decade. On the negative side, on inferential items which require more cognitive processing on the part of the reader, performance is declining for our 17-year-olds and showing no gain for 13-year-olds. Furthermore, when asked to respond in writing to a variety of reading passages, students performed at a startingly low level on tasks involving analyzing or generalizing skills. While able to make judgements about a piece of writing, students showed very little evidence of being able to move beyond some superficial evaluative statement to support or defend thei. view. [P.3]

Mathematics. Mathematics has been assessed twice during the 1970's with results from a third study currently being analyzed. For 9-year-olds, a slight decrease in overall mathematics performance was noted in the NAEP study between 1973 and 1978. This decline was based on lower performance in the areas of recall of mathematical facts and ability to solve applied problems in math. For 13-year-olds, a slight decline was noted between the two assessment periods in computational skills, mathematical understanding, and problem solving, although the declines were slight. Seventeen-year-olds showed declines in both computational skills and mathematical understanding. Martin (1981) summarizes National Assessment findings in mathematics across the two assessments:

> Overall, the mathematical performance of students at all three ages appeared to be stable in the areas of mathematical knowledge, and whole number computation. Significant gains were found among 13 and 17-year-olds on items dealing with the metric system. The decline in mathematical skills for both teenage groups appeared to be attributable to student performance on items dealing with more complex computational skills such as fractions, percents, exponents, and square roots.
>
> After examining the results of the mathematics assessments, a panel of mathematics educators and mathematicians cited a number of factors which, in their opinion, had contributed to the declines in students mathematical abilities. These included: the back to basics movement, which has resulted in the narrowing of mathematics curricula to a focus on computational skills, mathematical facts and definitions in many areas; the simplified approach to problem solving that has evolved in mathematics textbooks being widely used (where as few words were used as possible and where a student seldom has to determine which

mathematical operation must be used to solve the problem); the "mechanistic" approach to teaching problem solving where students are taught to look for "cue" words to decide what operation is called for; and the increased emphasis on testing which, in turn, places emphasis in those areas which are easily tested. [P.2]

Science. Science has also been assessed three times during the decade of the 70's by National Assessment. While slight downward trends were noted between the first and second assessments of science (1970 and 1973), only 17-year-olds showed a decline between the second and third assessment (1977), while the overall performance of the 9-year-old and 13-year-old age groups was rather constant between the second and third assessments. Students appear to show greatest strength in the biological sciences areas measured by NAEP, while rather systematic declines were noted in the physical sciences areas. The National Assessment science results are summarized by Martin as follows:

> Considerable evidence suggests that students know very little about the basic nature and causes of important, science related societal problems. They also do not seem to understand the relationship between relatively basic research and possible solutions to those problems. There is evidence that science is viewed as a "fix it" rather than a "produce knowledge that will prevent it" enterprise. [P.3]

Social Studies. NAEP has conducted two assessments of social studies (1972 and 1976). The period between these two studies saw no change in the total performance of the 9-year-old group while the performance of 13-year-olds declined very slightly and 17-year-olds performance declined to a somewhat greater degree. In all three age groups, items measuring political knowledge declined between the two assessments. Martin illustrates some of the social studies findings from the two assessments:

> While nearly all the students in both assessments could name the President of the United States, in the second assessment slightly less than one-half of the 17-year-olds could name either their congressperson or one of their senators, a decline of nine percentage points from 1969. About one-fifth of the 13-year-olds in either assessment could successfully identify one of their representatives from either the U.S. House of Representatives or

the U.S. Senate. In the second assessment 64% of the 13-year-olds and 81% of the 17-year-olds knew a senator is elected to office. [P.3]

Writing. The NAEP writing assessments have been conducted at three points including 1970 and 1979, with the interim assessment in 1974. Interestingly, the National Assessment results from these three studies have found no major change in the writing abilities of students during the decade. Martin offers the following analysis:

> The majority of students at age 9, 13, and 17 demonstrated control over the basic conventions of writing. However, a sizable minority (from 10% to 25%) at each age appeared to have very serious problems with writing; their papers contained two to three times as many errors as the average paper written by students their age. [P.1]

The 17-year-old group wrote in a more coherent fashion in 1979 than they did in 1969. This high school group used more transitions in their stories, and produced more coherent paragraphs in descriptive essays than their counterparts a decade earlier. Martin offers some insight into why writing may not be stressed (as much as would be desirable) in the schools with the following observation:

> Writing instruction continues to be considered the responsibility only of English teachers instead of an activity that pervades the entire curriculum. Additionally, many teachers deprive students of writing opportunities by relying on multiple-choice, true-false, or short-answer tests and shying away from essay tests. Many people teaching English were trained in other subjects and know little about teaching writing; many teachers trained to teach English have had little training in composition or writing; and many English teachers perceive themselves as "literature teachers," not writing teachers, and focus on the products of writing instead of the process. Finally, fewer writing assignments are given because of the time required to read and critique such assignments and many teachers feel -- justifiably in most cases -- that they do not have the time required. Yet writing is a skill that requires practice. [P.1]

The Arts. Both the visual arts and music have been assessed twice during the decade of the 70's. Results from the assessments of visual art

showed that the performance of 9-year-olds remained essentially stable between 1975 and 1979, while that of the 13 and 17-year-old age groups declined slightly in this same period. The decreases were largely attributed to declines in students "valuing" of art and the importance they placed upon art, as well as their willingness to accept all kinds of art, not just the traditional art forms. NAEP (1982) has the following summary in respect to art education:

> While the primary focus of art education at all levels in schooling is on providing art-making experiences, the NAEP art experts concluded that on design and drawing tasks measured by National Assessment, "the majority of students do not appear to design or draw particularly well." Improvements in performance with age and number of art classes taken indicate that design and drawing skills can be taught and are not solely the function of a youngster's innate creativity. [P.2]

The two assessments of music (1972 and 1979) showed that, in general, American students have positive attitudes about music and many have actually performed in school music groups. On the other hand, the music knowledge of both the 9 and 17-year-old age groups declined between the two assessment periods, while that of the 13-year-old age group remained constant. The national declines were attributed to diminishing knowledge about the elements of music and how such elements are represented symbolically. The area of knowledge of musical styles and history remained essentially stable between the two assessments. NAEP (1982) offers some suggestions as to why the results in music emerge as they do:

> Members of the (NAEP) music interpretative panel attributed the lack of growth on items about musical elements and symbols to the fact that general music classes, where these concepts are usually taught, are often required courses for middle or junior high students but either are not available or not required for senior high school students. Students may learn about music history and music styles by listening to music or through classes other than music classes, panel members agreed. Not particularly alarmed by the relatively low percentages able to classify music by historical period, the panel pointed out that very few high schools offer the kind of music history courses that would equip students to answer these questions. [P.3]

The NAEP Analysis of Literacy in America. Brown (1981) has examined the implications of National Assessment findings for an estimate of the "literacy" of American students. Clearly, there is no totally acceptable definition of "literacy," but the author does make some extremely important points in respect to the differences between the fundamental skills possessed by young Americans and higher level skills. Brown's conclusion is the following:

> The assessment results show that most 17-year-olds possessed basic literacy skills. The proportions of disadvantaged young people who have acquired these skills are still lower than the proportions of advantaged teenagers, but that gap narrowed through the 70's. The results also show that the proportion of teenagers demonstrating higher-level cognitive skills has been declining through the 70's. Our education system appears to be doing an adequate job of inculcating basic skills, but loosing ground with respect to high-level skills. [P.10]

International Studies in Evaluation: Academic Performance of Students in the United States and Other Countries.

One of the most ambitious studies of academic achievement ever attempted was the effort to study the characteristics of education around the world called the "International Studies in Evaluation." Although the number of countries participating varied by the topic of the inquiry, 15 or more countries participated in every major aspect of the study. The great majority of these countries were the highly developed and urbanized countries of Europe, however, the study also included the United States, Japan, Israel, Chili, India, Iran, and Thailand.

One of the important insights furnished by this massive effort was the clear demonstration that the United States, perhaps more than any other country, has an education system which reaches virtually all its young people. This is in marked contrast to the majority of other countries studied where diminishingly small percentages of students remain in the

educational system past the age of 14. Tyler (1981) makes the point very graphically:

> At the time of the cross-national testing program, the U.S. retained 78% of the age group through the final year of secondary school, while Japan retained 70%, Sweden 65%, Australia 29%, Hungary 28%, England 20%, Scotland 17%, New Zealand 13%, The Netherlands 13%, and Germany 8%. [P.308]

The above illustrates the massive experiment in educational opportunity for all which has characterized education in the United States and sets the U.S. system apart from the "education for the elite" approaches of many countries.

Summary of Key Findings From the International Evaluation Studies.

One of the most interesting findings of the International Evaluation effort pertained to a special group of students consisting of the top 5% academically of each participating country. In respect to this group Tyler offers the following conclusion: ". . . the top 5% of U.S. young people attain the same high scores reached in nations where advanced schooling is reserved for an elite." [P.307]

Perhaps the fairest comparison across countries was obtained by an examination of students in the study's 14-year-old group. Typically children of that age are still in school in most modern nations, thus results from that group give a reasonable approximation of performance for any developed country. Two of the key curriculum areas in the International Studies were reading comprehension and science. For the 14-year-old group mentioned above, the United States ranked third among the 15 nations tested. Only Japan and Italy had higher scores on reading comprehension for students at this level. Another key curriculum area, science, showed a rather similar pattern for 14-year-olds. Here, the United States was fourth among 16 nations tested. U.S. scores were lower than those of Japan, Hungary, and West Germany.

In mathematics, results from the International Evaluation Studies showed that, while children from nearly all developed nations had mastered the basic operations by age 14, only Japanese children were highly skillful in dealing with the application of computational skills to real world problems. As in other curriculum areas, the top 5% of U.S. high school seniors performed extremely well compared to the other countries in mathematics. However, the average math score for the American high school seniors tested was the lowest among the nations included in this part of the study. This fact appears highly related to the low selectivity of the American high school with over 78% of those beginning school in the United States still in school as seniors. Still it must be noted that the Japanese, who retain 70% of their students through high school graduation, performed rather well in mathematics.

Tyler offers the following analysis of the total International Evaluation effort:

> This review of cross-national data on educational achievement indicates that the U.S. educational system has clearly been responsive both to the rapid changes in society and to its basic democratic ideology. It has reached a larger proportion of its young people than almost all other nations, while its top 5% have attained the same high scores by nations that attempt to teach only a small fraction of their 18-year-olds. There are still problems to be solved, but the progress is encouraging. [P.310]

SUMMARY AND CONCLUSIONS

This chapter presents an overview of findings from each of the preceding chapters. Instead of recapitulating the results already presented for each information source, the focus will be on examining several major areas of performance or implications and relating appropriate sources of information to these major areas. This chapter has five major sections. The first section is Academic Achievement which covers mathematics, reading/language arts, science, social studies, art achievement, and music achievement. The second major section is Student Characteristics which deals with information in areas such as academic self-concept, peer relations capabilities, and career development. A third section summarizes pertinent information about the implementation of certain Educational Processes in Utah schools, as well as students' evaluations of their educational experience. A fourth section points out implications for Key Program Thrusts and Goals of the State Board of Education and the State Office of Education. A final section will endeavor to highlight implications of the information presented in this volume for Education in the 80's and Beyond.

In general, the material which follows will have already been highlighted in previous sections. However, in some cases, new information will be introduced to provide additional perspectives on performance trends and implications.

Academic Achievement

Mathematics. As is the case with most of the traditional academic areas which will be reviewed here, distinct differences have been noted in both state and national results in mathematics based on the level of skills

being assessed. Utah Statewide Educational Assessment results have shown a rather positive picture at both grade 5 and grade 11 concerning the achievement of mathematics basic skills. Indeed, at grade 11, the Utah results are markedly higher on the Comprehensive Tests of Basic Skills in 1981 than was true in 1978.

Results from the Statewide Assessment Program, National Assessment, and the American College Testing Program suggest that students in Utah, as well as nationally, do not demonstrate the same level of competence in intermediate and higher level math skills (such as algebra and geometry) which is evident in the fundamental levels of math. Furthermore, there are clear differences between the performance of males and females at the secondary level within the state and nationally which are distinctly in favor of males on tests such as the ACT.

The most recent Utah Statewide Assessment examined mathematics course-taking patterns of Utah eleventh grade boys and girls and found significantly lower percentages of females electing into courses such as second-year algebra and plane geometry. This same study found distinctly lower percentages of students in Utah's small high schools enrolling in intermediate and higher level mathematics.

In appraising the results from the arithmetic computation items of the Adult Performance Level study, which was carried out on a random sample of Utah adults, the picture is one of an adult population which is, in general, capable of dealing effectively with very fundamental, every day mathematics problems. On the other side of the spectrum, Utah's most gifted students in mathematics consistently out-perform their peers across the nation in Advanced Placement mathematics.

To review, the performance picture in mathematics is generally positive when considering lower-level mathematics skills of both elementary and secondary students as well as the state's most gifted students. These groups perform consistently better than national comparison groups in the most recent data available. Conversely, there is very considerable evidence that intermediate and higher-level mathematics skills are not being acquired to a sufficient degree by either Utah students or students across the nation. In view of the mathematics course selection problems for females identified above, as well as other factors, such as the supply of qualified teachers, this problem continues to demand serious attention from educators and the public.

Reading/Language Arts. Both the 1978 and 1981 Statewide Assessment studies revealed that the scores of Utah fifth and eleventh grade students were much higher than those of the national norm group on the Comprehensive Tests of Basic Skills in reading. This held true for both vocabulary and reading comprehension. These findings are reinforced by the results of the Adult Performance Level study which showed that a great majority of adult Utah citizens possess basic, minimal reading skills necessary to function in society.

The national picture in reading does not appear to be quite as bright as that for the state. Again, the evidence from National Assessment results suggests that students across the nation have mastered the basics of reading to a very significant degree. The concern emerges in examining higher-order skills. In particular, items demanding inferential judgements from students, showed declining performance for the National Assessment 13-year-old and 17-year-old samples, as did items involving analyzing or generalizing skills. While the data in hand suggest that Utah students do

perform slightly better on higher-level reading skills, the results show room for improvement in reading areas such as those calling for higher-level cognitive functioning.

In the content area of English usage, as measured by the American College Testing program, the scores of Utah college-bound students have approximated those of the national ACT norm group over a rather long period of time. It is worth noting that both Utah and national scores on ACT English have declined over a rather extended period with a recent leveling. The implication here is that many of the factors which influence scores nationally are likely influencing scores within the state; additional attention to various areas of English usage, such as grammar, punctuation, and style would seem merited.

Results from the Advanced Placement program in English show a consistent increase in Utah performance over a 17-year period. For this same 17-year span the scores of the national AP English test-takers have remained quite consistent, but at a level slightly higher than that of the Utah group.

While writing, as such, has not been directly assessed as part of any statewide study in Utah, the results from national studies, such as National Assessment, would indicate that a serious look should be taken at the need to enhance writing instruction. Greater focus is needed on the structural elements of writing, and students need many more opportunities to produce compositions and receive informed criticism of their work.

The total picture in reading and the other language arts suggests strongly that Utah elementary and secondary students perform very capably in the area of reading basic skills. Very high percentages of Utah adults

can deal with the every day minimal reading skills necessary to function in society. Considerable national evidence suggests that more emphasis should be placed on helping students acquire advanced skills in both reading comprehension and in the use of the English language with particular emphasis on structure and composition.

Science. Evidence from virtually every source reviewed in this report suggests that Utah students perform rather well in the area of science. Statewide Assessment findings showed that Utah fifth and eleventh grade students scored at dramatically higher levels than the national norm groups on the science test of the Comprehensive Tests of Basic Skills. This superiority of Utah students in science is also reflected in the performance of Utah high school students on the ACT science test, where the Utah group out-performs the national norm group over an extended period of time up through the present.

The national picture, as documented by the National Assessment of Educational Progress, is not as bright. National Assessment has found a consistent downward trend in the performance of students at age 9, 13 and 17 over three assessment dates. The declines are most pronounced for the 17-year-old group and least evident for the 9-year-old group. The national findings suggest that the physical rather than the biological sciences are the source of weakness in national test results.

Utah's academically gifted students have shown a very significant trend of growth in their Advanced Placement scores in biology over a 17-year period, but continue to score at slightly lower levels than the national AP group. On the AP chemistry test, students have been essentially equal to the national group in their performance during the last several years.

Overall, science continues to be an area of real strength for Utah students at both the elementary and secondary levels. Efforts need to be made to sustain and build on this record and to continue to attract and keep available science teachers.

Social Studies. There is remarkable similarity in the performance of Utah high school students and the national sample on the American College Testing program social studies test. Both the Utah and national score levels are somewhat lower than they were ten years ago on this test, however, Utah scores are up almost a full standard scale point from a low reached in 1976. For the most recent testing period, Utah ACT social studies scores are slightly higher than the national norm group.

National Assessment has measured knowledge, skills, and attitudes in social studies twice. These studies demonstrated very little change in the overall performance of the nation's 9-year-olds with slight declines at the 13-year-old level and larger declines for 17-year-olds. Basically, items which tapped political knowledge declined between the 1972 and 1976 NAEP assessments.

The American history test in the Advanced Placement program shows a rather vivid increase in the performance of academically gifted Utah students since 1966. Still, the Utah AP group continues to perform at levels slightly below the much more select national group on this test.

Art and Music Achievement. Results from three assessments of music achievement in the Statewide Educational Assessment program show consistent growth for Utah fifth graders between 1975 and 1981, with the largest increase in performance coming between 1975 and 1978. The scores of Utah eleventh graders have also risen consistently over the three assessments to a high achieved in 1981. Positive changes were also noted in art

achievement, as measured by the Statewide Assessment program between 1978 and 1981, for both fifth and eleventh grade students in Utah.

It is clear, however, that the absolute levels of performance in both art and music leave room for improvement in these areas. This same finding is documented by National Assessment results in art and music achievement which were not as positive as the Utah profile.

Student Characteristics

This section will feature a summary of findings dealing with certain critical student characteristics other than the academic achievement areas which have been reviewed.

Academic Self-Concept. The Utah Statewide Assessment program has gauged the level of student academic self-concept over all three major assessments. The fifth and eleventh grade students tested in this program have generally reported rather high levels of positive adjustment as indicated by their endorsement of positive self-descriptions on the various measures of emotional maturity. Over the three assessment periods, including 1975, 1978, and 1981, slightly over 50% of the Utah fifth graders tested have indicated rather high levels of academic self-concept. During this same time slightly over 40% of the eleventh graders show the same profile. The percentage of students endorsing more negative self-descriptions has remained in the 14% to 19% area for all three assessments at both grade levels. In view of the substantial relationship between student academic self-concept and other important educational outcomes, including academic achievement, it is clear that this area deserves continuing study. Strategies designed to enhance student self-concept should be an important aspect of elementary and secondary education.

Peer Relations. The profile of results on the peer relations measure from the Statewide Assessment program shows consistent improvement from 1975 through the 1981 assessment. Generally, the score levels over all three assessments suggest improving degrees of development of social skills for Utah fifth and eleventh graders and fewer students exhibiting very poor levels of such skills. The importance of stressing peer relations in the schooling process was indicated in further results from the Utah Assessment which demonstrated significant relationships between peer relations and other areas of educational outcomes such as academic self-concept, independent development, and enjoyment of school.

Career Development and Career Awareness. The Statewide Assessment program measures several different aspects of student career development and awareness. These include scales measuring career development experience, career awareness, and exploration, as well as independent development, and economic awareness and consumer competence.

The career development experience scale measures the participation of Utah eleventh graders in school career education activities. While performance on this measure indicated a slight upward trend between 1978 and 1981, it is still somewhat alarming that over one-third of the Utah eleventh graders tested indicated no experience in this area. Results from the career awareness and exploration scale, which focuses on the extent to which students have considered personal career plans and activities, show a distinctly positive trend from 1975 through 1981. Over this period of time an increase of 10% in the number of students having seriously considered career decisions has been observed. During the same span of time the percentage of students reporting little attention to this area has dropped from 34% to 30%. The latter percentage is still much too high. Clearly,

there is still considerable room for greater implementation of such career education thrusts as student use of career resource centers, work observation. career-focused parent-involvement and individual student planning.

Educational Aspirations. The pattern of educational degree aspirations of Utah college-bound students is somewhat different than the national ACT sample. Utah students tend to be more interested in pursuing a vocational or technical program than the national ACT sample, and less interested in a terminal bachelor's degree program. There is also considerably more interest on the part of Utah students in obtaining a professional degree such as the Ph.D. or M.D. than was observed in the ACT national college-bound sample. Utah students are more interested than the ACT national comparison group in college majors such as education, the fine arts, and home economics; they are less inclined to pursue majors such as engineering, biological sciences and business.

Demographic Characteristics. Student family background/socio-economic status has been shown to be related to academic performance in a number of national and state studies. The State Assessment program has documented this for the state of Utah in demonstrating that students from lower socio-economic status backgrounds score significantly lower on academic performance measures than do other students.

A variety of national studies have documented higher levels of performance for oriental and caucasian students than is observed for other racial or ethnic groups on academic achievement measures. Limited data at the state level would suggest this is also true of Utah students as well.

The size and location of the schools which Utah students attend appears to have little relationship with academic performance at the elementary level. At the high school level, however, State Assessment

results show that students from smaller rural high schools tend not to perform as well as students from larger schools. Differences are most pronounced on academic measures such as mathematics and reading.

Measurement of Aspects of Educational Process and Student Evaluations of Their Educational Experience.

All three Statewide Assessments have measured the perceptions of Utah fifth graders concerning the implementation of a set of key classroom processes. These have included individualization of instruction, teacher emphasis on reinforcement of self-concept, degree of classroom participation, classroom emphasis on the development of career talents, and "expectations," or how hard students perceive they are being expected to work in the classroom. While the absolute numbers of students reporting high levels of implementation of the above mentioned educational processes is not as high as one would desire, there has been rather systematic growth in the percentages of students reporting high levels of these teaching strategies in their classrooms over the three Statewide Assessments. This is particularly true for reinforcement of self-concept, classroom participation, and development of career talents. The individualization of instruction measure has not grown from 1975 through 1981, and in fact, showed a slight decrease between 1978 and 1981. The "expectations" measure seems to be much more descriptive of Utah schools than the other processes studied with over two-thirds of the fifth graders tested in 1981 indicating high levels of "expectations" in their classrooms.

These findings of positive trends on the instructional strategies measured are particularly important since additional research accomplished as part of the State Assessment program has shown that classrooms where these instructional strategies have high implementation also tend to have

high scores on academic achievement and other educational outcome measures. For example, there is a substantial relationship between the "expectations" educational process measure and the performance of Utah students on mathematics and reading achievement scores.

Student Attitude Toward School and Evaluations of Schooling. Statewide Assessment results over the three assessment periods to date show rather stable patterns of student enjoyment of school at both grade 5 and 11. Moderately high percentages of students at both grade 5 and grade 11 do report substantial levels of enjoyment of school but, at the same time, nearly one-fourth of the fifth graders tested in all three assessments held at least slightly negative feelings about school overall.

The Utah 1982 ACT college-bound sample evaluated the overall adequacy of their high school education in a considerably more positive fashion than did the national sample. A higher percentage of Utah students rated their high school experience as either "excellent" or "good" than did the national group. This tended to be true across secondary preparation areas including business, vocational, college preparation, or a general curriculum.

Accreditation of Utah High Schools. Utah high schools have continued to demonstrate a quite enviable record in the area of school accreditation. As of the 1982 school year, 91 of Utah's 95 public high schools were accredited by the Secondary Commission of the Northwest Association of Schools and Colleges. This meant that those schools had been judged as meeting standards in ten different areas of educational quality including: the educational program, pupil personnel services, the school plant, instructional media, records, program improvement, professional preparation, administration, teacher load, and student activities.

Implications for Key Program Thrusts and Goals of The State Board and State Office of Education.

This section of the summary presents a brief overview of how the information contained in this report relates to several important efforts of the State Board and State Office of Education. This summary is certainly not intended to be all inclusive, but does point out the relevance of information of this kind to several specific areas of program emphasis.

System-Wide Planning. The set of five-year goals established by the State Board of Education for the Utah educational system has a major emphasis on system-wide planning. Throughout this report an attempt has been made to highlight areas of educational performance which are strong in the state, as well as those which appear to be in need of additional emphasis. This kind of performance information is directly related to the system-wide planning goal set by the Board. Certainly the kinds of information reported here should be used in conjunction with a variety of other information in the continuous process of policy and program evaluation and needs assessment. The existence of evaluation and assessment information, such as that described in this document, is essential not only as a component of needs assessment and master planning, but as a partial index of the success of program efforts which result from system-wide and local educational planning efforts.

Utah's Student Outcome Goals. As in previous reports in this series, a concerted effort has been made to describe educational performance as a very wide spectrum of possible outcomes. This is in harmony with the statement on student outcomes of the State Board of Education which identifies a wide range of student maturities or goals for individual

students. In particular, the Utah Statewide Educational Assessment program has been structured to measure key aspects of student maturity in five goal areas including: intellectual, emotional, esthetic, social, and productive maturity. The measurement of aspects of these goals not only assists educators in monitoring performance in programs designed to foster such characteristics, but also stresses the worth and importance of academic efforts which are beyond the "basics."

Utah's 1977 Graduation Requirements. Utah school districts have made considerable progress in implementing many aspects of the 1977 Graduation Requirements. Two areas of those requirements, evaluation of student functional competency and the individual plan for secondary students, are addressed by several different sources of information in this report.

In 1978, this report first noted the growing amount of empirical documentation, both at the national and state level, that a great majority of students and adult citizens do have at least minimal skills in such areas as communication, mathematics, and consumer competence. The performance evidence which has become available since 1978 strengthens that observation. Clearly, a predominant emphasis on lower-level, basic skills will not have the educational impact of a wide-range, competency-based approach to education. It is exceedingly unlikely that attention to lower-level skills will impact on such intermediate and higher-level measures of performance as the ACT or Scholastic Aptitude Test. It is possible that disproportional emphasis on only lower-level skills could impact negatively on tests such as the college entrance measures. The danger lies in becoming satisfied with having met just minimal standards and failing to strive for achieving the highest potentials of students. The point is not that assessing or teaching lower-level skills is an

inappropriate component of the educational system, it is rather that minimums need to co-exist with maximums in a total approach to the development of minimum, intermediate, and higher-level skills.

Information from the most recent Statewide Assessment indicates that only about half of the eleventh graders tested had participated in any in-depth, individual education planning program at their schools. The individual plan for all secondary students which is required by the 1977 Utah Graduation Requirements would seem an important element in helping students design programs which will meet individual needs. This matter requires further study and, in fact, an intensive study of the implementation of the individual plan requirement is currently under way.

Implications For Education in the 80's and Beyond.

Preparing for the "Information Society." Recently the Education Commission of the States addressed the matter of how well the schools of the nation are preparing students for the so-called "information society." Certainly the decades of the 80's and 90's will be characterized by an increasing focus on information and information technology. A key issue is whether or not our present educational delivery system is responsive to changes currently impacting it and how will it accommodate to the pressures of tomorrow. The Education Commission of the States (1982) summarized its examination of these matters with the following statement:

> The United States has entered the age of rapid information transmission. Breakthroughs in electronics and communication technology are responsible for this transformation and permit unpresidented industrial restructuring. Structural changes in the labor force characterize an expanding economy, however, and need not threaten economic stability. Thus, by examining the skills needed in tomorrow's labor force, we can better prepare workers for the changing conditions they will encounter.
>
> Other factors significantly related to economic growth are advances in new knowledge and increased education levels of the

work force. Occupational growth throughout the 1980's is projected to expand most rapidly in the higher skilled technical occupations. Tomorrow's workers will likely need improved skills in the selection and communication of information. Many of todays skills considered to be of a "higher" level are the potential basic skills of tomorrow. Attention given only to the minimum competencies, as currently defined, shows a lack of foresight and leaves many students without adequate preparation for future learning and employability. The National Assessment of Educational Progress (NAEP) surveys the knowledge, skills, and attitudes of the nations 17-year-old students. Survey results indicate that today's minimum skills are demonstrated successfully by a majority of students. Higher-order skills, however, are achieved only by a minority of 17-year-olds, and this proportion declined over the past decade. If this trend continues, as many as two million students may graduate in 1990 without the skills necessary for employment in tomorrow's market place. Many efforts are already underway to promote higher standards of educational achievement. Future actions must include long-range planning in the following areas:

- An increased awareness of the contribution of human resources to economic productivity.
- An understanding of the diverse needs of tomorrow's students and of workers displaced by technological changes.
- Improved education/industry partnerships to maintain relevant goals in education.
- Re-evaluation processes of essential employment skills.
- Improved curricula that incorporate future requirements and instruction in higher order skills. [P.1-2]

The above stated observations on national implications have equal relevance for the state of Utah. The long-term decline in ACT college entrance scores which has characterized both national and state performance during the decade of the 70's, suggests the need for programs which stress appropriate preparation for each student and a renewed emphasis on intermediate and higher-level skills for college-bound students. The answer would seem not to be unrealistically high standards imposed on all students regardless of their capabilities or educational intentions. What

is called for is the intelligent tailoring of programs for each student with appropriate content and standards based on student needs. A more rigorous program, including higher standards, would seem to offer the greatest post-secondary opportunities for students who are not certain of their post-high school direction.

The advent of an information society carries with it the strong need for the preparation of a large segment of the work force skilled in mathematics, science, and technology. A recent Education Commission of the States report (1982) cites the work of the National Science Board's Commission on Pre-College Education in defining three major tasks that the educational system must address in these areas:

1. Generate a sufficiently large pool of well-prepared and motivated students to pursue professional careers in science and engineering;

2. Provide a range of high quality educational opportunities that are sufficiently broad and flexible to prepare a wide spectrum of students for careers in technically oriented occupations and professions; and

3. Raise the general science and technology literacy level of all students to prepare them better to live in the society of today and tomorrow, regardless of what careers they elect to pursue (National Science Board, 1982). [ECS p. 44]

Implementation of the Research on Effective Schools. A growing body of research information exists which provides the basis for improving elementary and secondary education and is predicated on school effectiveness research over the past several years. Michael Cohen (1982) of the National Institute of Education offers the following synopsis of this body of information:

> This large collection of research findings holds great promise for the improvement of the nation's schools. If state and local leaders are willing to examine the concepts, theories, and frameworks inherent in the research, then to apply them -- carefully tailored to fit state and local circumstances -- schools will surely be on the road to becoming more effective. The research does not promise "overnight cures"; it only offers some grounds for optimism. [P.6]

While a multitude of studies have offered their own specific sets of characteristics which their analyses suggest promote quality education, a recent effort by the Colorado State Department of Education (1982) looked across ten major research efforts or reviews in establishing 12 classes of factors which appear to contribute to enhanced academic achievement. The Colorado analysis includes the following factors:

- Curricular Congruence - Teaching to clear, sequenced objectives.
- Assessment - A quality testing program is established.
- Leadership of the Principal - Sets high standards, involves public, encourages staff.
- High Expectations - High performance standards for students.
- School-Wide Norms, Values, Practices and Policies - Consistent policies throughout school.
- School Climate Factors - Trust, respect, high morale, caring.
- Monitoring and Feedback of Student Progress - Frequent measurement and reporting of student progress.
- Time on Task - Students spend a high percentage of their time on academic tasks.
- Organization and Management of the Instructional Setting - Effective discipline, all students can succeed.
- Instructional Effectiveness - Variety of effective teaching techniques used.
- Parent and Community Involvement - Strong program of parent support and involvement.
- Accountability/Accreditation/Planning Process - Planning process exists which identifies priorities and monitors program success. [P.3]

Research currently available suggests that each of these areas, when present in a school, may contribute to enhanced academic achievement, particularly at the elementary level. The Colorado effort, as well as a somewhat similar undertaking in Connecticut, have capitalized on the quality schools research in helping the schools of those states identify strengths and weaknesses in respect to factors identified by the research for the purpose of school improvement.

Efforts which capitalize on the work reviewed above, as well as other related research, are currently being studied by the Utah State Office of Education. Clearly, the whole area of implementation of what is known about making schools more effective is one which is deserving of careful analysis and attention by state and local educators and may hold tremendous promise for upgrading the quality of education by methods based on sound research.

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APPENDIX A

ACT SCORE MEANS & SD'S FOR SUCCESSIVE YEARS
OF ACT-TESTED COLLEGE-BOUND STUDENTS
UTAH

SCHOOL YEAR	ACT ENGLISH MEAN	(SD)	ACT MATH MEAN	(SD)	ACT SOC. STD. MEAN	(SD)	ACT N. SCI. MEAN	(SD)	ACT COMP. MEAN	(SD)
TOTAL (MEN AND WOMEN COMBINED)										
1966-67	18.3	--	18.2	--	19.6	--	20.8	--	19.3	--
1967-68	18.3	4.9	18.1	6.9	19.2	6.4	20.7	6.1	19.2	5.1
1968-69	18.6	4.7	19.3	6.3	19.8	6.4	21.1	6.0	19.8	4.9
1969-70	18.4	5.0	19.7	6.2	19.5	6.3	21.3	5.7	19.8	4.9
1970-71	18.2	5.3	18.9	6.9	18.4	6.9	21.4	6.0	19.4	5.3
1971-72	18.2	5.3	19.1	6.9	19.1	6.9	21.9	6.0	19.7	5.3
1972-73	18.4	5.0	18.9	6.9	18.2	7.2	21.6	6.1	19.4	5.4
1973-74	18.1	5.0	18.3	7.2	18.2	7.3	21.6	6.1	19.2	5.4
1974-75	17.8	5.1	17.4	7.7	17.2	7.3	21.7	6.0	18.7	5.6
1975-76	17.3	5.2	17.1	7.4	16.8	7.1	20.8	6.3	18.1	5.6
1976-77	17.7	5.0	17.0	7.7	17.2	7.1	21.2	6.2	18.4	5.6
1977-78	17.9	5.2	17.1	7.4	17.2	7.1	21.2	6.0	18.5	5.6
1978-79	17.9	5.2	17.0	7.4	17.2	6.9	21.3	6.0	18.5	5.5
1979-80	18.0	5.3	17.0	7.4	17.5	7.0	21.5	5.9	18.6	5.5
1980-81	17.7	5.2	16.8	7.6	17.3	7.1	21.1	5.9	18.3	5.5
1981-82	17.8	5.3	16.9	7.7	17.5	7.1	21.0	6.0	18.4	5.6
MEN										
1966-67	17.3	5.0	20.1	6.4	19.8	6.4	22.0	6.3	19.9	5.2
1967-68	17.2	4.9	19.9	6.7	19.7	6.4	22.0	6.2	19.8	5.2
1968-69	17.8	4.9	20.9	6.4	20.6	6.3	22.5	6.0	20.6	5.1
1969-70	17.6	5.1	21.4	6.2	20.5	6.3	22.5	5.8	20.6	5.0
1970-71	17.4	5.4	20.8	7.0	19.1	7.0	22.8	6.0	20.1	5.5
1971-72	17.4	5.3	21.0	6.9	19.8	6.9	23.2	6.0	20.5	5.4
1972-73	17.7	5.1	21.0	6.9	19.4	7.2	23.1	6.2	20.4	5.5
1973-74	17.4	5.0	20.4	7.1	19.4	7.2	23.4	6.2	20.3	5.5
1974-75	17.1	5.0	19.7	7.8	18.7	7.3	23.4	6.0	19.8	5.7
1975-76	16.7	5.2	19.3	7.4	17.8	7.2	22.3	6.3	19.1	5.7
1976-77	17.1	5.1	19.0	7.8	18.4	7.2	23.0	6.3	19.5	5.8
1977-78	17.4	5.2	19.2	7.5	18.1	7.3	22.9	6.2	19.5	5.7
1978-79	17.5	5.2	19.2	7.5	18.3	7.1	22.8	6.2	19.6	5.6
1979-80	17.5	5.3	18.9	7.6	18.6	7.1	23.2	5.8	19.7	5.6
1980-81	17.1	5.2	18.7	7.7	18.4	7.3	22.6	5.9	19.3	5.7
1981-82	17.1	5.4	18.6	7.8	18.4	7.2	22.6	6.1	19.3	5.7
WOMEN										
1966-67	19.4	4.4	16.1	6.1	19.3	5.9	19.5	5.6	18.7	4.6
1967-68	19.5	4.6	16.2	6.5	18.6	6.4	19.3	5.7	18.5	4.9
1968-69	19.4	4.4	17.6	5.8	18.9	6.3	19.5	5.6	19.0	4.6
1969-70	19.2	4.8	17.9	5.8	18.5	6.3	20.1	5.3	19.0	4.6
1970-71	18.9	5.1	17.1	6.3	17.8	6.8	20.2	5.7	18.6	5.1
1971-72	18.9	5.1	17.3	6.4	18.4	6.9	20.6	5.7	18.9	5.1
1972-73	18.9	4.8	17.2	6.4	17.2	7.1	20.4	5.7	18.6	5.2
1973-74	18.7	4.9	16.6	6.7	17.1	7.2	20.1	5.6	18.2	5.2
1974-75	18.3	5.0	15.5	7.2	15.9	7.0	20.3	5.5	17.7	5.3
1975-76	17.8	5.1	15.3	7.0	15.9	6.9	19.5	5.9	17.3	5.3
1976-77	18.2	5.0	15.3	7.2	16.3	6.9	19.8	5.8	17.5	5.4
1977-78	18.3	5.2	15.4	6.9	16.4	6.8	19.8	5.6	17.6	5.3
1978-79	18.3	5.1	15.2	6.9	16.2	6.7	20.1	5.5	17.6	5.2
1979-80	18.3	5.2	15.4	6.8	16.6	6.8	20.0	5.5	17.8	5.2
1980-81	18.2	5.2	15.2	7.0	16.4	6.9	19.7	5.4	17.5	5.2
1981-82	18.4	5.3	15.3	7.3	16.7	6.9	19.6	5.5	17.6	5.3

N-COUNTS

TEST YEAR	MEN	WOMEN	TOTAL
1966-67	5,386	5,057	10,443
1967-68	5,773	5,453	11,226
1968-69	5,887	5,550	11,437
1969-70	6,369	6,416	12,785
1970-71	6,172	6,562	12,734
1971-72	5,797	6,311	12,108
1972-73	5,133	6,180	11,313
1973-74	5,258	6,085	11,343
1974-75	5,437	6,358	11,795
1975-76	4,954	5,922	10,876
1976-77	5,208	6,257	11,465
1977-78	5,213	6,242	11,455
1978-79	5,185	6,233	11,418
1979-80	5,989	7,038	13,027
1980-81	6,042	7,140	13,182
1981-82	6,158	7,047	13,205

ACT SCORE MEANS & SD'S FOR SUCCESSIVE YEARS OF ACT-TESTED COLLEGE-BOUND STUDENTS* 10% NATIONAL SAMPLE

SCHOOL YEAR	ACT ENGLISH MEAN	(SD)	ACT MATH MEAN	(SD)	ACT SOC. STD. MEAN	(SD)	ACT N. SCI. MEAN	(SD)	ACT COMP. MEAN	(SD)
TOTAL (MEN AND WOMEN COMBINED)										
1969-70	18.5	5.1	20.0	6.6	19.7	6.6	20.8	5.9	19.9	5.1
1972-73	18.1	5.3	19.1	7.2	18.3	7.4	20.8	6.3	19.2	5.7
1973-74	17.9	5.2	18.3	7.4	18.1	7.6	20.8	6.4	18.9	5.7
1974-75	17.7	5.3	17.6	7.9	17.4	7.5	21.1	6.3	18.6	5.8
1975-76	17.5	5.4	17.5	7.6	17.0	7.3	20.8	6.6	18.3	5.9
1976-77	17.7	5.2	17.4	7.8	17.3	7.3	20.9	6.5	18.4	5.9
1977-78	17.9	5.4	17.5	7.7	17.1	7.3	20.9	6.5	18.5	5.9
1978-79	17.9	5.4	17.5	7.6	17.2	7.2	21.1	6.3	18.6	5.8
1979-80	17.9	5.4	17.4	7.6	17.2	7.3	21.1	6.2	18.5	5.8
1980-81	17.8	5.4	17.3	7.9	17.2	7.3	21.0	6.1	18.5	5.8
1981-82	17.9	5.3	17.2	8.0	17.3	7.3	20.8	6.3	18.4	5.8
MEN										
1969-70	17.6	5.2	21.1	6.5	20.3	6.6	21.6	6.1	20.3	5.2
1972-73	17.3	5.3	20.2	7.2	19.0	7.5	21.7	6.5	19.7	5.8
1973-74	17.1	5.2	19.7	7.4	19.1	7.6	22.2	6.5	19.7	5.8
1974-75	17.1	5.2	19.3	7.9	18.7	7.5	22.4	6.4	19.5	5.9
1975-76	16.8	5.4	19.2	7.7	17.9	7.4	22.0	6.7	19.1	5.9
1976-77	17.0	5.2	18.9	7.8	18.2	7.4	22.3	6.6	19.2	6.0
1977-78	17.4	5.4	19.1	7.7	18.0	7.4	22.3	6.6	19.3	6.0
1978-79	17.4	5.4	19.1	7.6	18.1	7.4	22.3	6.5	19.3	5.9
1979-80	17.3	5.4	18.9	7.7	18.2	7.4	22.4	6.3	19.3	5.9
1980-81	17.3	5.3	18.9	7.9	18.3	7.5	22.3	6.3	19.3	5.9
1981-82	17.3	5.3	18.6	8.0	18.1	7.5	22.2	6.4	19.2	6.0
WOMEN										
1969-70	19.4	4.9	18.8	6.4	19.0	6.5	20.0	5.7	19.4	5.0
1972-73	18.9	5.1	18.0	7.0	17.7	7.4	19.9	6.0	18.8	5.5
1973-74	18.6	5.1	17.1	7.2	17.3	7.5	19.6	5.9	18.2	5.5
1974-75	18.3	5.2	16.2	7.6	16.4	7.3	20.0	6.0	17.8	5.6
1975-76	18.0	5.3	16.0	7.3	16.2	7.1	19.7	6.3	17.6	5.7
1976-77	18.2	5.2	16.1	7.5	16.5	7.1	19.6	6.2	17.8	5.7
1977-78	18.3	5.4	16.2	7.4	16.4	7.0	19.8	6.2	17.8	5.7
1978-79	18.4	5.3	16.2	7.2	16.4	7.0	20.2	5.9	17.9	5.5
1979-80	18.3	5.4	16.2	7.3	16.4	7.1	20.0	5.9	17.9	5.6
1980-81	18.2	5.4	16.0	7.6	16.4	7.1	20.0	5.8	17.8	5.7
1981-82	18.4	5.3	16.0	7.7	16.6	7.1	19.7	5.9	17.8	5.7

N-COUNTS

TEST YEAR	MEN	WOMEN	TOTAL
1969-70 (3% sample)	11,994	11,664	23,658
1972-73 (10% sample)	35,350	38,394	73,744
1973-74 (10% sample)	35,068	38,927	73,995
1974-75 (10% sample)	32,932	38,511	71,443
1975-76 (10% sample)	31,658	37,508	69,166
1976-77 (10% sample)	33,773	40,583	74,356
1977-78 (10% sample)	34,682	42,295	76,977
1978-79 (10% sample)	35,122	42,899	78,021
1979-80 (10% sample)	37,130	45,090	82,220
1980-81 (10% sample)	37,675	45,901	83,576
1981-82 (10% sample)	36,304	44,148	80,452

*Based on High School Profile Service which includes first four national test dates only for years 1969-70 through 1975-76. For years after 1975-76, all five test dates are included.